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Dear Readers, Researchers, and Distinguished Colleagues,

It is our great pleasure to present the **July 2026 issue of The Online Journal of New Horizons in Education (TOJNED)**. As an international peer-reviewed journal, TOJNED remains committed to publishing high-quality scholarly work that contributes to the continuous advancement of educational sciences while fostering interdisciplinary dialogue across diverse academic communities.

This issue reflects the truly global nature of educational research. We are honored to publish contributions from scholars representing different regions of the world, bringing together diverse perspectives, educational traditions, and research methodologies. The articles included in this issue demonstrate how educational challenges and innovations transcend national boundaries, encouraging international collaboration and the exchange of knowledge.

The July 2026 issue covers a broad spectrum of contemporary topics that are shaping education, organizational development, psychology, leadership, communication, and digital transformation. Several studies investigate the rapidly expanding role of **artificial intelligence** in corporate communication, organizational decision intelligence, strategic decision-making, organizational resilience, consumer behavior, sustainability communication, and aviation services. These studies explore important mechanisms such as digital trust, AI readiness, digital leadership, technological anxiety, data literacy, and analytical culture, providing valuable insights into the evolving relationship between intelligent technologies and human-centered organizational processes.

Educational research remains at the core of this issue. Readers will find important contributions addressing competence-based teacher education, quality assurance in mathematical teacher preparation, student-centered and constructive learning, evidence-based instructional approaches, motivation-based learning, professional career choice, digital-age approaches to developing speech and thinking skills in primary education, classroom teachers' perspectives on textbook reforms, and the persistent challenge of technology access inequality in online education. Together, these studies contribute to improving educational quality, equity, and effectiveness across various learning environments.

This issue also includes valuable research focusing on organizational support and work-life balance, sustainable digital transformation, green transformative leadership, green business ethics, and the development of quality culture. Furthermore, several articles examine significant social and legal issues, including disciplinary and judicial responses to prohibited substance use among students and the protection of mentally disabled individuals from sexual abuse. These contributions remind us that educational research extends beyond classrooms, influencing social justice, ethics, public policy, and community well-being.

One of the defining characteristics of this issue is its interdisciplinary perspective. By integrating educational sciences with communication, artificial intelligence, organizational behavior, psychology, leadership, ethics, sustainability, and digital transformation, the published studies illustrate the increasingly interconnected nature of today's academic landscape. Such diversity strengthens our understanding of complex educational and societal challenges while encouraging innovative solutions grounded in empirical research.

On behalf of the Editorial Board, I would like to express my sincere appreciation to all authors who entrusted TOJNED with their valuable research. I also extend my deepest gratitude to our reviewers and editorial team, whose professionalism, dedication, and constructive evaluations ensure the scientific quality and integrity of every published article.

We hope that the research presented in this issue will inspire new ideas, stimulate scholarly discussions, and encourage future international collaborations. TOJNED will continue to provide an inclusive academic platform that welcomes innovative, rigorous, and impactful research from scholars around the world.

Thank you for your continued support of TOJNED.

With my best regards,

Prof. Dr. Aytekin İşman

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AI-AUGMENTED CORPORATE COMMUNICATION AND ORGANIZATIONAL DECISION INTELLIGENCE: THE MEDIATING ROLE OF DIGITAL TRUST AND THE MODERATING EFFECT OF ANALYTICAL CULTURE

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ABSTRACT

Artificial intelligence (AI) has become a strategic organizational capability that reshapes corporate communication and managerial decision-making processes. Particularly in the banking sector, AI-supported communication technologies facilitate information sharing, improve communication efficiency, and support evidence-based strategic decisions. However, the effectiveness of these technologies depends not only on technological capabilities but also on employees' digital trust and the organization's analytical culture. Therefore, this study examines the effect of AI-Augmented Corporate Communication on Organizational Decision Intelligence, while investigating the mediating role of Digital Trust and the moderating effect of Analytical Culture. The study employed a quantitative research design using a relational survey model. Data were collected from 371 **employees** working in public and private banks located in Nicosia and Kyrenia in the Turkish Republic of Northern Cyprus (TRNC) through a structured questionnaire. The measurement instrument consisted of four constructs: AI-Augmented Corporate Communication, Digital Trust, Analytical Culture, and Organizational Decision Intelligence. The collected data were analyzed using IBM SPSS Statistics 28.0 and AMOS 24.0. Frequency analysis, reliability analysis, confirmatory factor analysis, independent samples t-test, one-way ANOVA, Pearson correlation, multiple regression, structural equation modeling, bootstrapping mediation analysis, and moderation analysis were performed. The findings indicate that AI-Augmented Corporate Communication has a significant positive effect on Organizational Decision Intelligence. Digital Trust was found to partially mediate this relationship, while Analytical Culture significantly strengthened the positive effect of AI-Augmented Corporate Communication on Organizational Decision Intelligence. Furthermore, all proposed hypotheses were supported, and the structural model demonstrated satisfactory goodness-of-fit indices.

This study contributes to the literature by integrating corporate communication, artificial intelligence, organizational decision intelligence, digital trust, and analytical culture into a comprehensive conceptual framework. The findings also provide practical implications for banking managers seeking to improve strategic decision-making through AI-supported communication systems and strengthen organizational competitiveness during digital transformation.

Keywords: Artificial Intelligence, Corporate Communication, Organizational Decision Intelligence, Digital Trust, Analytical Culture, Banking Sector, Digital Transformation.

1. Introduction

Artificial intelligence (AI) has rapidly evolved from an emerging digital technology into a strategic organizational capability that fundamentally reshapes communication, management, and decision-making processes. Advances in generative AI, machine learning, natural language processing, and predictive analytics have enabled organizations to transform traditional communication systems into intelligent platforms capable of supporting real-time information exchange, knowledge management, and executive decision-making. Consequently, AI has become an essential component of organizational digital transformation strategies across both public and private sectors (Dwivedi et al., 2023; Feuerriegel et al., 2024).

Corporate communication has similarly undergone substantial transformation as organizations increasingly rely on AI-powered systems to facilitate communication among managers, employees, customers, regulators, and other stakeholders. AI-augmented corporate communication enables organizations to automate communication processes, improve message accuracy, personalize stakeholder interactions, and rapidly analyze large volumes of organizational

information. Rather than functioning solely as an operational communication tool, artificial intelligence has become a strategic resource that enhances organizational responsiveness, communication effectiveness, and managerial performance (Huang & Rust, 2022; Korzynski et al., 2023).

The banking industry is among the sectors most profoundly influenced by artificial intelligence. Banks increasingly employ AI technologies to improve customer communication, fraud detection, financial risk assessment, credit evaluation, regulatory compliance, and strategic planning. AI-supported communication systems allow banking managers to access accurate and timely information, monitor organizational performance, anticipate market changes, and make more informed strategic decisions. As financial institutions continue their digital transformation, the integration of AI into communication processes has become a critical determinant of organizational competitiveness and sustainable performance (OECD, 2024; World Economic Forum, 2024).

Alongside these technological developments, the concept of Organizational Decision Intelligence has emerged as a new managerial capability. Decision intelligence integrates artificial intelligence, data analytics, organizational knowledge, and human expertise to improve the quality, speed, consistency, and effectiveness of managerial decisions. Rather than replacing managerial judgment, AI-supported decision intelligence enhances managers' analytical capabilities by providing evidence-based recommendations, predictive insights, and comprehensive evaluations of alternative strategic actions. Consequently, organizations capable of integrating AI into their communication and decision-making processes are expected to achieve higher organizational agility and superior strategic outcomes (Shrestha, Ben-Menahem, & von Krogh, 2019; Davenport & Mittal, 2022).

Despite these developments, technological capability alone is insufficient to ensure successful AI implementation. Employees and managers must trust AI-generated information before incorporating it into organizational decisions. Therefore, digital trust has become one of the most important determinants of AI adoption in organizational environments. Digital trust reflects employees' confidence that AI systems operate reliably, transparently, ethically, and securely. Organizations characterized by higher levels of digital trust are more likely to utilize AI-supported communication effectively and benefit from AI-assisted strategic decision-making (Glikson & Woolley, 2020; Choung, David, & Ross, 2023).

Another organizational factor influencing AI effectiveness is analytical culture. Analytical culture refers to an organizational environment that encourages evidence-based management, data-driven decision-making, continuous learning, and analytical thinking throughout the organization. Even highly advanced AI technologies cannot improve organizational performance unless managers possess a culture that values analytical reasoning and effectively utilizes organizational data. Therefore, analytical culture is expected to strengthen the relationship between AI-supported corporate communication and organizational decision intelligence (Ghasemaghaei, 2019; Kiron, Prentice, & Ferguson, 2014).

Within the Turkish Republic of Northern Cyprus (TRNC), banks have significantly accelerated their digital transformation initiatives in recent years. Commercial banks operating in Nicosia and Kyrenia increasingly utilize artificial intelligence for customer relationship management, digital banking services, internal communication, fraud detection, financial reporting, and managerial decision support. However, despite these developments, empirical studies investigating how AI-augmented corporate communication influences organizational decision intelligence within the banking sector remain limited. Furthermore, little is known about the mechanisms through which digital trust and analytical culture contribute to this relationship in the TRNC banking context.

Accordingly, this study investigates the effect of AI-augmented corporate communication on organizational decision intelligence among employees working in banks located in Nicosia and Kyrenia, the two major financial centers of the Turkish Republic of Northern Cyprus. The study further examines the mediating role of digital trust and the moderating effect of analytical culture in explaining this relationship. By integrating communication management, strategic management, artificial intelligence, organizational behavior, and information systems perspectives, this research aims to contribute to the growing literature on AI-enabled organizational transformation while providing practical recommendations for banking managers seeking to improve organizational decision quality through intelligent communication systems.

1.1. Problem Statement

Artificial intelligence has become an indispensable component of organizational communication and managerial decision-making, particularly within the banking industry, where rapid information processing and evidence-based strategic decisions are essential. Financial institutions increasingly invest in AI-supported communication platforms, predictive analytics, intelligent reporting systems, and digital customer interaction technologies to improve organizational performance. Nevertheless, the successful implementation of these technologies depends not only on technological infrastructure but also on employees' trust in AI systems and the organization's analytical culture (Dwivedi et al., 2023; World Economic Forum, 2024).

Although previous studies have extensively examined AI adoption, digital transformation, and organizational performance, relatively few have focused specifically on the relationship between AI-augmented corporate communication and organizational decision intelligence. Moreover, limited empirical evidence explains how digital trust serves as a psychological mechanism linking AI-supported communication with decision intelligence or how analytical culture strengthens this relationship. This gap is particularly evident in developing digital economies, where organizations are still adapting to AI-supported management systems (Shrestha et al., 2019; Choung et al., 2023).

The banking sector in the Turkish Republic of Northern Cyprus provides an appropriate context for investigating these issues. Banks operating in Nicosia and Kyrenia have increasingly implemented AI-supported communication technologies; however, empirical evidence regarding their influence on organizational decision intelligence remains scarce. Additionally, no comprehensive study has simultaneously examined the mediating role of digital trust and the moderating effect of analytical culture within the TRNC banking sector.

Therefore, the primary research problem addressed in this study is whether AI-augmented corporate communication enhances organizational decision intelligence in banks operating in Nicosia and Kyrenia, and whether this relationship is explained by digital trust and strengthened by analytical culture. Addressing this problem is expected to contribute to both the theoretical development of AI-enabled organizational communication research and the practical improvement of strategic decision-making in the banking industry.

1.2. Research Hypotheses

H1: AI-Augmented Corporate Communication has a positive and significant effect on Organizational Decision Intelligence.

H2: AI-Augmented Corporate Communication has a positive and significant effect on Digital Trust.

H3: Digital Trust has a positive and significant effect on Organizational Decision Intelligence.

H4: Digital Trust mediates the relationship between AI-Augmented Corporate Communication and Organizational Decision Intelligence.

H5: Analytical Culture moderates the relationship between AI-Augmented Corporate Communication and Organizational Decision Intelligence.

H5a: The positive effect of AI-Augmented Corporate Communication on Organizational Decision Intelligence is stronger in organizations with a high level of Analytical Culture.

H5b: The positive effect of AI-Augmented Corporate Communication on Organizational Decision Intelligence is weaker in organizations with a low level of Analytical Culture.

2. Theoretical Framework

2.1. AI-Augmented Corporate Communication

Artificial intelligence (AI) has fundamentally transformed corporate communication by enabling organizations to integrate intelligent technologies into internal and external communication processes. Unlike conventional communication systems, AI-augmented corporate communication combines human expertise with artificial intelligence technologies such as machine learning, natural language processing, generative AI, predictive analytics, and conversational agents to improve communication quality, organizational responsiveness, and managerial effectiveness. As organizations increasingly rely on digital communication infrastructures, AI has evolved from a supporting technology into a strategic organizational capability that enhances information processing, stakeholder engagement, and decision-making effectiveness (Dwivedi et al., 2023; Korzynski et al., 2023).

Corporate communication refers to the systematic management of communication activities between an organization and its internal and external stakeholders. Traditionally, corporate communication focused on transmitting organizational information through formal communication channels. However, digital transformation has substantially changed communication practices by enabling organizations to manage large volumes of information, personalize communication, and provide real-time responses to stakeholders. AI technologies have accelerated this transformation by automating communication processes while simultaneously improving communication accuracy, consistency, and efficiency (Huang & Rust, 2022; Verhoef et al., 2021).

Recent advances in generative artificial intelligence have significantly expanded the capabilities of corporate communication systems. Applications such as ChatGPT, Microsoft Copilot, Gemini, intelligent chatbots, and AI-supported reporting systems enable organizations to generate communication content, summarize business information, support customer interactions, monitor organizational communication, and assist managers during strategic planning. These technologies reduce communication costs, improve organizational agility, and increase the speed of information exchange across departments (Feuerriegel et al., 2024; Dwivedi et al., 2023).

Within the banking industry, AI-augmented corporate communication has become increasingly important because financial institutions operate in highly dynamic environments requiring rapid information exchange, strict regulatory

compliance, and timely managerial decisions. AI-supported communication systems facilitate internal coordination, automate customer communication, monitor operational risks, and provide managers with real-time business intelligence. Consequently, banks adopting AI-supported communication practices are expected to improve operational efficiency, communication quality, and strategic responsiveness (OECD, 2024; World Economic Forum, 2024).

From the perspective of organizational management, AI-augmented corporate communication enhances knowledge management by collecting, processing, storing, and disseminating organizational knowledge more efficiently than traditional communication systems. Intelligent communication platforms enable employees to access relevant information rapidly, collaborate across organizational boundaries, and transform organizational knowledge into strategic actions. As a result, communication becomes more evidence-based, transparent, and responsive to organizational needs (Nonaka & Takeuchi, 1995; Santoro et al., 2021).

AI-supported communication also contributes to organizational agility by improving communication speed and reducing uncertainty during managerial decision-making. Intelligent communication systems continuously analyze internal and external information sources, identify emerging risks and opportunities, and provide decision-makers with predictive insights. This capability enables organizations to respond more rapidly to changing market conditions and strengthens organizational resilience in increasingly competitive environments (Raisch & Krakowski, 2021; Davenport & Mittal, 2022).

Despite its strategic advantages, AI-augmented corporate communication also presents several managerial challenges. Organizations must address issues related to algorithm transparency, data privacy, ethical AI governance, cybersecurity, employee acceptance, and communication reliability. Managers should therefore establish governance mechanisms that ensure responsible AI implementation while maintaining stakeholder trust and communication quality. The long-term success of AI-supported communication depends on balancing technological innovation with ethical and human-centered management practices (Floridi & Cowls, 2022; Glikson & Woolley, 2020).

Overall, AI-augmented corporate communication represents a strategic organizational capability that extends beyond communication automation. It supports organizational learning, facilitates knowledge sharing, strengthens stakeholder relationships, and enhances managerial decision processes. Accordingly, organizations capable of integrating artificial intelligence into their communication systems are expected to achieve superior organizational performance and stronger decision intelligence. Therefore, AI-augmented corporate communication constitutes the primary independent variable of the present study and provides the theoretical foundation for examining its influence on organizational decision intelligence within the banking sector.

Organizational Decision Intelligence (ODI) has recently emerged as a multidisciplinary concept integrating artificial intelligence, data analytics, decision sciences, organizational learning, and strategic management to improve managerial decision-making processes. Unlike traditional decision support systems that primarily provide historical information, organizational decision intelligence combines human judgment with artificial intelligence to generate predictive insights, evaluate alternative courses of action, and optimize organizational decisions. Consequently, decision intelligence has become a strategic organizational capability that enhances decision quality, organizational agility, and business performance (Shrestha, Ben-Menahem, & von Krogh, 2019; Davenport & Mittal, 2022).

Decision intelligence extends beyond conventional business intelligence by integrating artificial intelligence, machine learning, and human expertise into a unified decision-making framework. While business intelligence focuses primarily on reporting and descriptive analytics, decision intelligence emphasizes prescriptive and predictive decision support. AI-powered analytical systems continuously process structured and unstructured organizational data, identify hidden patterns, predict future scenarios, and recommend optimal strategic actions. This capability enables organizations to improve both the speed and quality of managerial decisions (Provost & Fawcett, 2013; Feuerriegel et al., 2024).

In modern organizations, decision intelligence has become increasingly important due to the complexity of contemporary business environments. Managers are expected to evaluate large volumes of information, respond rapidly to environmental changes, manage uncertainty, and make evidence-based strategic decisions. Artificial intelligence facilitates these processes by reducing cognitive workload, improving analytical reasoning, minimizing decision bias, and supporting managers with real-time recommendations. Consequently, organizations utilizing AI-supported decision intelligence systems are more capable of achieving strategic flexibility and competitive advantage (Brynjolfsson & McAfee, 2017; Shrestha et al., 2019).

Within the banking industry, organizational decision intelligence plays a particularly important role because financial institutions operate in environments characterized by high uncertainty, regulatory complexity, financial risks, and continuous technological change. Banks increasingly utilize artificial intelligence to support credit evaluation, fraud detection, financial forecasting, customer relationship management, risk assessment, and strategic planning. AI-supported decision intelligence enables banking managers to integrate organizational knowledge with predictive analytics, resulting in faster and more accurate strategic decisions (OECD, 2024; World Economic Forum, 2024).

Decision intelligence is influenced by both technological and organizational factors. Advanced analytical technologies alone cannot improve organizational decisions unless managers possess sufficient competencies to interpret AI-generated information and integrate analytical insights into managerial judgment. Therefore, organizational communication, digital trust, knowledge sharing, analytical culture, and leadership support collectively determine the effectiveness of decision intelligence systems. Organizations capable of aligning these organizational capabilities with artificial intelligence technologies are more likely to improve decision quality and organizational performance (Davenport & Harris, 2017; Ghasemaghaei, 2019).

Recent empirical research suggests that organizations with higher levels of decision intelligence demonstrate superior innovation capability, organizational adaptability, customer responsiveness, and strategic effectiveness. Rather than replacing managerial expertise, decision intelligence supports collaborative decision-making by combining human experience with AI-generated recommendations. Accordingly, organizational decision intelligence is increasingly recognized as one of the most important managerial capabilities supporting sustainable competitive advantage in digitally transformed organizations (Raisch & Krakowski, 2021; Feuerriegel et al., 2024).

Based on these theoretical perspectives, organizational decision intelligence is conceptualized in this study as the ability of managers to make timely, accurate, evidence-based, and strategically effective decisions by utilizing AI-supported communication systems. Within the banking sector, decision intelligence is expected to improve organizational responsiveness, enhance managerial performance, and strengthen strategic competitiveness. Therefore, organizational decision intelligence represents the dependent variable of the present study.

3. Method

3.1. Research Model

This study employed a quantitative research design using a relational survey model to examine the effect of AI-Augmented Corporate Communication on Organizational Decision Intelligence. The study also investigated the mediating role of Digital Trust and the moderating effect of Analytical Culture. The proposed conceptual model consists of one independent variable (AI-Augmented Corporate Communication), one dependent variable (Organizational Decision Intelligence), one mediating variable (Digital Trust), and one moderating variable (Analytical Culture). Structural Equation Modeling (SEM) was employed to test the proposed hypotheses.

3.2. Population and Sample

The population of the study consisted of employees working in commercial banks operating in Nicosia and Kyrenia in the Turkish Republic of Northern Cyprus. A simple random sampling technique was employed. Data were collected from managers and white-collar employees working in public and private banks. A total of 371 valid questionnaires were included in the statistical analyses after excluding incomplete responses.

3.3. Data Collection Instruments

Data were collected using a structured questionnaire consisting of five sections. The first section included demographic questions concerning gender, age, education level, organizational tenure, managerial position, and AI usage experience. The second section measured AI-Augmented Corporate Communication. Since no universally accepted scale exists for this construct, the measurement items were adapted from the Strategic Internal Communication Scale developed by Men (2014) together with AI-supported organizational communication studies conducted by Korzynski et al. (2023) and Dwivedi et al. (2023). The adapted scale consisted of 10 items.

The third section measured Digital Trust using the Human Trust in Artificial Intelligence Scale developed by Glikson and Woolley (2020) and further supported by Choung et al. (2023). The scale consisted of 7 items.

The fourth section measured Analytical Culture using items adapted from the Data-Driven Organizational Culture Scale developed by Ghasemaghaei (2019) and the analytical culture framework proposed by Kiron, Prentice, and Ferguson (2014). The scale consisted of 8 items. The final section measured Organizational Decision Intelligence. Because no standardized measurement scale currently exists for this construct, the instrument was developed by adapting the Decision Effectiveness Scale proposed by Dean and Sharfman (1996), the Strategic Decision Effectiveness Scale developed by Elbanna (2006), and the AI-based decision-making framework introduced by Shrestha, Ben-Menahem, and von Krogh (2019). The adapted scale consisted of 10 items. All questionnaire items were measured using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree.

3.4. Data Collection Procedure

The data were collected between January and March 2026 using an online questionnaire distributed to employees working in banks located in Nicosia and Kyrenia. Participation was voluntary, anonymous, and based on informed consent. Incomplete questionnaires were excluded from the analyses.

3.5. Data Analysis

The collected data were analyzed using IBM SPSS Statistics 28.0 and AMOS 24.0.

Frequency analysis, descriptive statistics, Independent Samples t-test, One-Way ANOVA, reliability analysis (Cronbach's Alpha), Confirmatory Factor Analysis (CFA), Pearson correlation analysis, multiple regression analysis, Structural Equation Modeling (SEM), Bootstrapping mediation analysis, and moderation analysis were performed. Statistical significance was accepted at $p < .05$.

3.6. Researcher's Role

The researcher was responsible for designing the research, adapting the measurement instruments, collecting the data, performing the statistical analyses, interpreting the findings, and preparing the manuscript. Ethical principles were followed throughout the study, and all participant responses were kept confidential.

3.7. Validity and Reliability

The reliability of the measurement scales was assessed using Cronbach's Alpha, while construct validity was evaluated through Confirmatory Factor Analysis (CFA). Convergent validity was examined using Composite Reliability (CR) and Average Variance Extracted (AVE) values. Discriminant validity was assessed using the Fornell–Larcker criterion. The goodness-of-fit of the measurement model was evaluated using χ^2/df , CFI, TLI, GFI, AGFI, RMSEA, and SRMR indices. The findings demonstrated that all measurement scales possessed satisfactory reliability and validity, supporting the proposed structural model.

Table 1. Demographic Characteristics of the Participants (n = 371)

Variable	Category	n	%
Gender	Female	176	47.4
	Male	195	52.6
Age	20–29 years	72	19.4
	30–39 years	138	37.2
	40–49 years	104	28.0
	50 years and above	57	15.4
Educational Level	Associate Degree	48	12.9
	Bachelor's Degree	191	51.5
	Master's Degree	109	29.4
	Doctoral Degree	23	6.2
Work Experience	1–5 years	83	22.4
	6–10 years	128	34.5
	11–15 years	96	25.9
	16 years and above	64	17.2
Position	Operations Officer	116	31.3
	Customer Representative	84	22.6
	Specialist	72	19.4
	Middle Manager	59	15.9
	Senior Manager	40	10.8
Location	Nicosia	224	60.4
	Kyrenia	147	39.6
Bank Type	Public Bank	152	41.0
	Private Bank	219	59.0
Frequency of AI Use	Never	18	4.9
	Rarely	57	15.4
	Occasionally	109	29.4
	Frequently	121	32.6
	Very Frequently	66	17.8
Total		371	100.0

Table 1 presents the demographic characteristics of the 371 bank employees who participated in the study. Of the participants, 52.6% were male and 47.4% were female. The largest proportion of respondents (37.2%) were between 30 and 39 years of age, followed by those aged 40–49 years (28.0%). Regarding educational attainment, more than half of the participants (51.5%) held a Bachelor's degree, while 29.4% had a Master's degree. In terms of work

experience, the majority of respondents (34.5%) had 6–10 years of professional experience. Concerning organizational position, 31.3% worked as Operations Officers, whereas 22.6% were Customer Representatives. Middle and senior managers accounted for 26.7% of the sample. With respect to geographical distribution, 60.4% of the participants were employed in banks located in Nicosia, while 39.6% worked in Kyrenia. Additionally, 59.0% of the respondents were employed in private banks, whereas 41.0% worked in public banks. Finally, the results indicate that the majority of participants reported using artificial intelligence frequently (32.6%) or very frequently (17.8%) in their daily work. This finding suggests that the respondents possess sufficient experience with AI-supported communication technologies, making the sample appropriate for examining the proposed research model.

Table 2. Reliability and Validity Analysis of the Measurement Scales

Construct	Number of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)	Factor Loading Range
AI-Augmented Corporate Communication	10	0.928	0.940	0.612	0.716–0.881
Digital Trust	7	0.912	0.924	0.631	0.724–0.872
Analytical Culture	8	0.904	0.918	0.607	0.703–0.864
Organizational Decision Intelligence	10	0.936	0.945	0.626	0.711–0.889

- Cronbach's Alpha ≥ 0.70
- Composite Reliability (CR) ≥ 0.70
- Average Variance Extracted (AVE) ≥ 0.50
- Standardized Factor Loading ≥ 0.60

Table 2 shows the reliability and validity results of the measurement scales. The Cronbach's Alpha coefficients ranged from 0.904 to 0.936, indicating excellent internal consistency for all constructs. Composite Reliability (CR) values varied between 0.918 and 0.945, exceeding the recommended threshold of 0.70. Similarly, the Average Variance Extracted (AVE) values ranged from 0.607 to 0.631, confirming satisfactory convergent validity. In addition, all standardized factor loadings were above 0.70, demonstrating that the observed variables adequately represented their respective latent constructs. Overall, the findings indicate that the measurement model possesses satisfactory reliability and validity for subsequent statistical analyses.

Table 3. Descriptive Statistics of the Study Variables (n = 371)

Variables	Number of Items	Mean	Standard Deviation	Interpretation
AI-Augmented Corporate Communication	10	4.08	0.56	High
Digital Trust	7	3.97	0.59	High
Analytical Culture	8	3.91	0.61	High
Organizational Decision Intelligence	10	4.12	0.54	High

Table 3 presents the descriptive statistics of the study variables. The results indicate that the participants reported high levels of AI-Augmented Corporate Communication (M = 4.08, SD = 0.56), Digital Trust (M = 3.97, SD = 0.59), Analytical Culture (M = 3.91, SD = 0.61), and Organizational Decision Intelligence (M = 4.12, SD = 0.54).

Among the variables, Organizational Decision Intelligence recorded the highest mean score, suggesting that employees perceived decision-making processes within their banks to be effective and supported by intelligent systems. AI-Augmented Corporate Communication also received a high evaluation, indicating that respondents considered AI technologies to play a significant role in facilitating organizational communication. Likewise, the findings demonstrate relatively high levels of Digital Trust and Analytical Culture, suggesting that employees generally trust AI-supported communication systems and perceive their organizations as promoting data-driven and analytical decision-making practices.

Table 4. Comparison of Study Variables According to Demographic Characteristics (Independent Samples t-test and One-Way ANOVA)

Demographic Variable	Test	AI-Augmented Corporate Communication	Digital Trust	Analytical Culture	Organizational Decision Intelligence
Gender	t	t=2.284, p=.023*	t=1.845, p=.066	t=1.912, p=.057	t=2.617, p=.009*
Age	ANOVA	F=4.186, p=.006*	F=3.574, p=.015*	F=2.741, p=.043*	F=5.203, p=.002*
Educational Level	ANOVA	F=5.428, p=.001*	F=4.137, p=.007*	F=3.996, p=.008*	F=6.215, p<.001*
Work Experience	ANOVA	F=3.472, p=.017*	F=2.894, p=.035*	F=3.268, p=.022*	F=4.581, p=.004*
Position	ANOVA	F=6.214, p<.001*	F=5.482, p=.001*	F=4.319, p=.005*	F=7.146, p<.001*
Bank Type (Public/Private)	t	t=1.992, p=.047*	t=1.504, p=.133	t=1.786, p=.075	t=2.134, p=.034*
Location (Nicosia/Kyrenia)	t	t=0.846, p=.398	t=0.914, p=.361	t=0.735, p=.463	t=1.068, p=.286

- p < .05

Table 4 presents the Independent Samples t-test and One-Way ANOVA results examining whether participants' perceptions differed according to demographic characteristics.

The findings indicate that AI-Augmented Corporate Communication differed significantly according to gender, age, educational level, work experience, position, and bank type ($p < .05$), whereas no significant difference was observed according to location ($p > .05$).

Similarly, Digital Trust showed significant differences based on age, educational level, work experience, and position, while no statistically significant differences were found for gender, bank type, and location.

For Analytical Culture, significant differences were identified across age, educational level, work experience, and position, whereas gender, bank type, and location did not produce statistically significant differences.

Finally, Organizational Decision Intelligence differed significantly according to gender, age, educational level, work experience, position, and bank type ($p < .05$). However, no significant difference was found between employees working in Nicosia and Kyrenia ($p > .05$).

Overall, the results suggest that managerial position, educational attainment, and professional experience are associated with higher perceptions of AI-supported corporate communication, digital trust, analytical culture, and organizational decision intelligence, while the geographical location of the bank does not appear to influence these perceptions.

Table 5. Correlation and Multiple Regression Analysis Results

Pearson Correlation Analysis

Variables	Mean	SD	1	2	3	4
1. AI-Augmented Corporate Communication	4.08	0.56	1			
2. Digital Trust	3.97	0.59	.684**	1		
3. Analytical Culture	3.91	0.61	.592**	.617**	1	
4. Organizational Decision Intelligence	4.12	0.54	.741**	.702**	.658**	1

Note: p < .01

Multiple Regression Analysis

Independent Variables	β	Std. Error	t	p
AI-Augmented Corporate Communication	.468	.048	9.62	<.001
Digital Trust	.291	.046	6.34	<.001
Analytical Culture	.214	.044	4.87	<.001

The Pearson correlation analysis revealed significant positive relationships among all study variables ($p < .01$). The strongest correlation was found between AI-Augmented Corporate Communication and Organizational Decision Intelligence ($r = .741$), followed by the relationship between Digital Trust and Organizational Decision Intelligence ($r = .702$). Analytical Culture was also positively associated with Organizational Decision Intelligence ($r = .658$). The multiple regression analysis indicated that the overall regression model was statistically significant ($F = 262.813$, $p < .01$).

.001) and explained 68.2% of the variance in Organizational Decision Intelligence ($R^2 = .682$). AI-Augmented Corporate Communication exerted the strongest positive effect on Organizational Decision Intelligence ($\beta = .468$, $p < .001$), followed by Digital Trust ($\beta = .291$, $p < .001$) and Analytical Culture ($\beta = .214$, $p < .001$). These findings provide empirical support for H1, H2, and H3, indicating that AI-Augmented Corporate Communication positively influences Organizational Decision Intelligence both directly and through its relationship with Digital Trust and Analytical Culture.

Table 6. Structural Equation Model, Mediation, Moderation, and Hypothesis Testing Results

Hypothesis	Structural Relationship	β	t	p	Result
H1	AI-Augmented Corporate Communication $\rightarrow$ Organizational Decision Intelligence	.468	9.62	<.001	Supported
H2	AI-Augmented Corporate Communication $\rightarrow$ Digital Trust	.684	14.71	<.001	Supported
H3	Digital Trust $\rightarrow$ Organizational Decision Intelligence	.291	6.34	<.001	Supported
H4	AI-Augmented Corporate Communication $\rightarrow$ Digital Trust $\rightarrow$ Organizational Decision Intelligence	.199	—	<.001	Supported
H5	AI-Augmented Corporate Communication $\times$ Analytical Culture $\rightarrow$ Organizational Decision Intelligence	.176	4.18	<.001	Supported
H5a	The effect is stronger when Analytical Culture is high	—	—	<.001	Supported
H5b	The effect is weaker when Analytical Culture is low	—	—	<.001	Supported

Model Fit Indices			
Fit Index	Value	Acceptable Threshold	Evaluation
χ^2/df	2.24	< 3.00	Acceptable
CFI	.956	> .90	Acceptable
TLI	.948	> .90	Acceptable
GFI	.931	> .90	Acceptable
AGFI	.904	> .85	Acceptable
RMSEA	.058	< .08	Acceptable
SRMR	.043	< .08	Acceptable

Mediation and Moderation Effects						
Effect Type	Path	β	Boot LLCI	Boot ULCI	p	Result
Mediation	AI-Augmented Corporate Communication $\rightarrow$ Digital Trust $\rightarrow$ Organizational Decision Intelligence	.199	.132	.276	<.001	Partial Mediation
Moderation	AI-Augmented Corporate Communication $\times$ Analytical Culture $\rightarrow$ Organizational Decision Intelligence	.176	.094	.251	<.001	Significant Moderation

Table 6 presents the structural equation model, mediation, moderation, and hypothesis testing results. The model fit indices indicate that the proposed model demonstrated acceptable goodness-of-fit values. Specifically, χ^2/df was below 3.00, CFI, TLI, and GFI values were above .90, and RMSEA and SRMR values were below .08. These results show that the structural model was statistically acceptable. The findings revealed that AI-Augmented Corporate Communication had a significant positive effect on Organizational Decision Intelligence ($\beta = .468$, $p < .001$), supporting H1. AI-Augmented Corporate Communication also had a significant positive effect on Digital Trust ($\beta = .684$, $p < .001$), supporting H2. In addition, Digital Trust positively affected Organizational Decision Intelligence ($\beta = .291$, $p < .001$), supporting H3.

The bootstrapping results demonstrated that Digital Trust partially mediated the relationship between AI-Augmented Corporate Communication and Organizational Decision Intelligence ($\beta = .199$, 95% CI [.132, .276], $p < .001$). Therefore, H4 was supported. Furthermore, the interaction effect between AI-Augmented Corporate Communication and Analytical Culture was statistically significant ($\beta = .176$, $p < .001$). This result indicates that Analytical Culture strengthens the positive relationship between AI-Augmented Corporate Communication and Organizational Decision Intelligence. Accordingly, H5, H5a, and H5b were supported. Overall, the findings confirm that AI-augmented corporate communication improves organizational decision intelligence both directly and indirectly through digital trust. Moreover, this effect becomes stronger in banks where analytical culture is more developed.

5. Conclusion And Recommendations

5.1. Conclusion

The primary objective of this study was to examine the effect of AI-Augmented Corporate Communication on Organizational Decision Intelligence among bank employees working in Nicosia and Kyrenia in the Turkish Republic of Northern Cyprus (TRNC). In addition, the study investigated the mediating role of Digital Trust and the moderating effect of Analytical Culture within the proposed research model.

The findings demonstrated that AI-Augmented Corporate Communication has a significant positive effect on Organizational Decision Intelligence. Banks that effectively integrate artificial intelligence into their corporate communication processes are more likely to improve communication quality, facilitate information sharing, and support evidence-based strategic decision-making. These findings indicate that artificial intelligence has evolved beyond being merely a technological tool and has become an important organizational capability contributing to managerial effectiveness.

The results also revealed that Digital Trust partially mediates the relationship between AI-Augmented Corporate Communication and Organizational Decision Intelligence. This finding suggests that employees' confidence in AI-supported communication systems enhances the positive impact of AI on organizational decision-making. Therefore, increasing digital trust appears to be essential for maximizing the benefits of artificial intelligence within banking organizations.

Furthermore, the study found that Analytical Culture significantly moderates the relationship between AI-Augmented Corporate Communication and Organizational Decision Intelligence. Banks that promote data-driven thinking, evidence-based management, and analytical decision-making practices benefit more from AI-supported communication technologies. These findings highlight that technological investments alone are insufficient unless they are supported by an organizational culture that values analytical reasoning and effective use of organizational data.

Overall, the study contributes to the literature by integrating artificial intelligence, corporate communication, organizational decision intelligence, digital trust, and analytical culture into a comprehensive research model. The findings provide both theoretical and practical implications for organizations seeking to improve strategic decision-making through AI-supported communication systems.

5.2. Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. Banks should integrate AI-supported corporate communication systems into strategic decision-making processes to improve communication efficiency and decision quality.
2. Bank managers should strengthen employees' digital trust by ensuring transparent, secure, and ethical use of artificial intelligence technologies.
3. Organizations should promote an analytical culture by encouraging data-driven decision-making and providing continuous training in data analysis and artificial intelligence applications.
4. Future studies should examine this research model in different sectors such as healthcare, tourism, education, and public institutions to compare the findings across industries.
5. Future research may extend the proposed model by including additional variables such as digital leadership, organizational innovation, technology readiness, employee resilience, or AI literacy to further explain organizational decision intelligence.

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ARTIFICIAL INTELLIGENCE-DRIVEN CORPORATE COMMUNICATION AND ORGANIZATIONAL RESILIENCE: THE MEDIATING ROLE OF EMPLOYEE AI READINESS AND THE MODERATING EFFECT OF DIGITAL LEADERSHIP

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ABSTRACT

Artificial intelligence (AI) has fundamentally transformed organizational communication processes and has become a strategic resource for enhancing organizational resilience in the digital era. Although AI-driven corporate communication offers considerable opportunities for improving communication efficiency, organizational adaptability, and strategic coordination, empirical evidence regarding the mechanisms through which these technologies strengthen organizational resilience remains limited. This study examines the effect of Artificial Intelligence-Driven Corporate Communication on Organizational Resilience by investigating the mediating role of Employee AI Readiness and the moderating effect of Digital Leadership.

A quantitative research design based on a correlational survey model was employed. The study was conducted among employees working in public and private commercial banks located in Nicosia, Kyrenia, and Famagusta in the Turkish Republic of Northern Cyprus (TRNC). Data were collected from 371 bank employees using a structured questionnaire consisting of four constructs: Artificial Intelligence-Driven Corporate Communication, Employee AI Readiness, Digital Leadership, and Organizational Resilience. The collected data were analyzed using IBM SPSS Statistics 28.0 and AMOS 24.0. Descriptive statistics, reliability analysis, confirmatory factor analysis, independent samples t-test, one-way ANOVA, Pearson correlation analysis, multiple regression analysis, structural equation modeling, bootstrapping mediation analysis, and moderation analysis were conducted.

The findings revealed that Artificial Intelligence-Driven Corporate Communication had a significant positive effect on Organizational Resilience. Employee AI Readiness partially mediated this relationship, indicating that employees' preparedness to adopt and utilize AI technologies enhanced the organizational benefits of AI-supported communication. Furthermore, Digital Leadership significantly moderated the relationship between AI-Driven Corporate Communication and Organizational Resilience, demonstrating that the positive impact of AI-supported communication was stronger in organizations characterized by higher levels of digital leadership. All proposed hypotheses were supported, and the structural model exhibited satisfactory goodness-of-fit indices.

The study contributes to the literature by integrating artificial intelligence, corporate communication, employee AI readiness, digital leadership, and organizational resilience into a unified conceptual framework. It also provides practical implications for bank managers and policymakers seeking to strengthen organizational resilience and improve digital transformation strategies through AI-supported corporate communication.

Keywords: Artificial Intelligence, Corporate Communication, Organizational Resilience, Employee AI Readiness, Digital Leadership, Banking Sector, Digital Transformation.

1. Introduction

Artificial intelligence (AI) has become one of the most transformative technologies affecting organizations in the twenty-first century. Advances in machine learning, generative artificial intelligence, natural language processing, and predictive analytics have significantly altered the way organizations communicate, process information, and make strategic decisions. Rather than serving merely as an operational tool, AI has evolved into a strategic organizational capability that enhances communication efficiency, organizational flexibility, innovation, and long-term competitiveness. Consequently, organizations across industries are increasingly integrating AI into their

communication systems to improve organizational performance and resilience (Dwivedi et al., 2023; Feuerriegel et al., 2024).

Corporate communication has experienced a substantial transformation during the digital era. Traditionally, corporate communication focused primarily on transmitting organizational messages to internal and external stakeholders. However, AI-powered communication technologies now enable organizations to automate routine communication, personalize stakeholder interactions, analyze large volumes of organizational data, and facilitate real-time information sharing. AI-driven communication systems contribute not only to communication effectiveness but also to strategic coordination, knowledge management, and organizational adaptability in rapidly changing business environments (Huang & Rust, 2022; Korzynski et al., 2023).

One of the most important organizational outcomes associated with AI-supported communication is organizational resilience. Organizational resilience refers to an organization's ability to anticipate, respond to, recover from, and adapt to unexpected disruptions while maintaining operational continuity. Recent crises, including the COVID-19 pandemic, economic uncertainty, cybersecurity threats, and rapid technological change, have demonstrated that organizational resilience is no longer solely dependent on financial resources but increasingly relies on digital capabilities, communication effectiveness, and organizational learning. AI-supported communication systems provide organizations with real-time information, predictive insights, and faster coordination mechanisms, thereby strengthening organizational resilience (Duchek, 2020; Lengnick-Hall, Beck, & Lengnick-Hall, 2011).

Despite rapid technological advancement, organizations cannot fully benefit from artificial intelligence unless employees are willing and capable of using AI technologies effectively. Consequently, Employee AI Readiness has emerged as a critical organizational capability. Employee AI readiness refers to employees' knowledge, skills, attitudes, confidence, and willingness to adopt and effectively utilize artificial intelligence within organizational processes. Employees with higher AI readiness are more likely to embrace AI-supported communication systems, collaborate with intelligent technologies, and contribute to organizational adaptability during periods of digital transformation (Jöhnk et al., 2021; Ameen, Tarhini, Shah, & Madichie, 2022). Another organizational factor influencing AI implementation is Digital Leadership. Digital leadership represents leaders' ability to guide organizational digital transformation, encourage innovation, support technological adoption, and create a culture that embraces continuous learning and digital collaboration. Leaders who possess strong digital leadership competencies facilitate employees' acceptance of AI technologies and foster an organizational climate that enhances communication quality, innovation, and resilience. Therefore, digital leadership is expected to strengthen the relationship between AI-driven corporate communication and organizational resilience (Eberl, Drews, & Mädche, 2024; Cortellazzo, Bruni, & Zampieri, 2019). The banking sector is among the industries experiencing the most rapid digital transformation worldwide. Artificial intelligence is increasingly utilized for customer relationship management, fraud detection, cybersecurity, financial risk management, regulatory compliance, internal communication, and strategic decision-making. As financial institutions continue to digitize their operations, effective corporate communication supported by AI has become essential for maintaining organizational resilience under conditions of technological disruption and market uncertainty (OECD, 2024; World Economic Forum, 2024).

Within the Turkish Republic of Northern Cyprus (TRNC), commercial banks have accelerated their digital transformation initiatives in recent years. Banks operating in Nicosia, Kyrenia, and Famagusta increasingly employ artificial intelligence technologies to improve customer services, internal communication, operational efficiency, and decision support systems. Nevertheless, empirical evidence regarding how AI-driven corporate communication contributes to organizational resilience within the TRNC banking sector remains limited. Furthermore, few studies have simultaneously examined the mediating role of Employee AI Readiness and the moderating effect of Digital Leadership in explaining this relationship.

Accordingly, this study investigates the effect of Artificial Intelligence-Driven Corporate Communication on Organizational Resilience among employees working in public and private banks located in Nicosia, Kyrenia, and Famagusta in the Turkish Republic of Northern Cyprus. Furthermore, the study examines the mediating role of Employee AI Readiness and the moderating effect of Digital Leadership within the proposed conceptual model. By integrating perspectives from corporate communication, strategic management, organizational behavior, and artificial intelligence, this study contributes to the growing literature on digital transformation while providing practical recommendations for banking managers seeking to strengthen organizational resilience through AI-supported communication systems.

The rapid integration of artificial intelligence (AI) into organizational processes has fundamentally transformed the way businesses communicate, coordinate, and make strategic decisions. AI-driven communication technologies, including intelligent chatbots, generative AI applications, predictive analytics, and automated communication systems, have become increasingly important for organizations seeking to improve operational efficiency and organizational adaptability. Although these technologies offer substantial opportunities, organizations continue to face significant

challenges in effectively integrating AI into their communication structures. Consequently, understanding how AI-driven corporate communication contributes to organizational resilience has become an important research issue within the fields of communication and management (Dwivedi et al., 2023; Feuerriegel et al., 2024).

Organizational resilience has emerged as one of the most critical organizational capabilities in today's highly uncertain business environment. Financial crises, cybersecurity threats, global pandemics, technological disruptions, and rapidly changing customer expectations require organizations to respond quickly while maintaining operational continuity. The banking sector, in particular, operates in a highly regulated and technology-intensive environment where communication accuracy, rapid information exchange, and organizational flexibility directly influence institutional performance. Despite increasing investments in artificial intelligence, many organizations still struggle to convert technological capabilities into sustainable organizational resilience (Duchek, 2020; Lengnick-Hall, Beck, & Lengnick-Hall, 2011).

One of the primary reasons for this challenge is that successful AI implementation depends not only on technological infrastructure but also on employees' readiness to adopt and effectively utilize artificial intelligence. Employees who lack sufficient AI knowledge, digital competencies, or confidence may resist AI-supported communication systems, thereby limiting their organizational benefits. Accordingly, Employee AI Readiness has become an essential organizational factor influencing the successful implementation of AI technologies. Nevertheless, empirical evidence regarding the mediating role of employee AI readiness in the relationship between AI-driven corporate communication and organizational resilience remains limited (Jöhnk, Weißert, & Wyrski, 2021; Ameen, Tarhini, Shah, & Madichie, 2022).

In addition to employee readiness, leadership has become increasingly important during organizational digital transformation. Leaders who possess strong digital competencies are more capable of promoting technological innovation, encouraging employee participation, supporting organizational learning, and managing digital change effectively. Conversely, insufficient digital leadership may reduce employees' willingness to adopt AI technologies and weaken organizational resilience. Although previous studies have separately examined digital leadership and artificial intelligence adoption, relatively few studies have investigated the moderating role of digital leadership within AI-supported corporate communication models (Cortellazzo, Bruni, & Zampieri, 2019; Eberl, Drews, & Mädche, 2024). The banking sector in the Turkish Republic of Northern Cyprus (TRNC) has experienced substantial digital transformation over the past decade. Commercial banks operating in Nicosia, Kyrenia, and Famagusta increasingly utilize artificial intelligence applications to improve customer relationship management, internal communication, operational efficiency, fraud detection, and decision-support systems. Despite these developments, there is limited empirical evidence regarding whether AI-driven corporate communication actually enhances organizational resilience within the TRNC banking sector. Furthermore, no comprehensive study has simultaneously examined the mediating role of Employee AI Readiness and the moderating effect of Digital Leadership within this relationship.

Therefore, an important research gap exists in understanding how AI-driven corporate communication contributes to organizational resilience in the banking sector and under what organizational conditions this relationship becomes stronger. Addressing this gap is particularly important for banks operating in the TRNC, where digital transformation has accelerated but empirical academic evidence remains limited. Accordingly, the present study investigates the effect of Artificial Intelligence-Driven Corporate Communication on Organizational Resilience, while examining the mediating role of Employee AI Readiness and the moderating effect of Digital Leadership among employees working in public and private banks located in Nicosia, Kyrenia, and Famagusta. By addressing these relationships, the study aims to contribute to both the communication and management literature and provide practical implications for strengthening organizational resilience through AI-supported communication systems.

1.2. Research Hypotheses

H1: Artificial Intelligence-Driven Corporate Communication has a positive and significant effect on Organizational Resilience.

H2: Artificial Intelligence-Driven Corporate Communication has a positive and significant effect on Employee AI Readiness.

H3: Employee AI Readiness has a positive and significant effect on Organizational Resilience.

H4: Employee AI Readiness mediates the relationship between Artificial Intelligence-Driven Corporate Communication and Organizational Resilience.

H5: Digital Leadership moderates the relationship between Artificial Intelligence-Driven Corporate Communication and Organizational Resilience.

H5a: The positive effect of Artificial Intelligence-Driven Corporate Communication on Organizational Resilience is stronger when the level of Digital Leadership is high.

H5b: The positive effect of Artificial Intelligence-Driven Corporate Communication on Organizational Resilience is weaker when the level of Digital Leadership is low.

3. Method

3.1. Research Model

This study adopted a quantitative research approach based on a correlational survey design to examine the relationship between Artificial Intelligence-Driven Corporate Communication and Organizational Resilience. The proposed conceptual model also incorporates Employee AI Readiness as a mediating variable and Digital Leadership as a moderating variable. The hypothesized relationships were tested using Structural Equation Modeling (SEM).

3.2. Population and Sample

The target population comprised employees working in public and private commercial banks operating in Nicosia, Kyrenia, and Famagusta in the Turkish Republic of Northern Cyprus (TRNC). A simple random sampling technique was employed to select participants from different organizational levels, including branch managers, assistant managers, operations personnel, customer relationship officers, digital banking specialists, and administrative staff. A total of 386 questionnaires were collected during the data collection process. Following the exclusion of incomplete and invalid responses, 371 questionnaires were retained for statistical analysis. The final sample size was considered adequate for Structural Equation Modeling and exceeded the minimum sample size recommended in the methodological literature.

3.3. Data Collection Instrument

Data were collected using a structured questionnaire composed of demographic questions and measurement items representing the latent constructs included in the proposed research model. Artificial Intelligence-Driven Corporate Communication was measured using ten items adapted from the Strategic Internal Communication Scale developed by Men (2014) and recent studies on AI-supported organizational communication conducted by Korzynski et al. (2023) and Dwivedi et al. (2023). Organizational Resilience was assessed using nine items adapted from the Organizational Resilience Capability framework proposed by Lee, Vargo, and Seville (2013) together with the resilience capability model introduced by Ducheck (2020). Employee AI Readiness was measured using eight items adapted from the organizational AI readiness framework developed by Jöhnk, Weißert, and Wyrski (2021) and further supported by Ameen et al. (2022). Digital Leadership was measured using eight items adapted from the Digital Leadership Scale proposed by Zeike et al. (2019) and the digital leadership framework presented by Eberl, Drews, and Mädche (2024). All measurement items were evaluated using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

3.4. Data Collection Procedure

The data collection process was carried out between February and April 2026. Questionnaires were administered to employees of public and private banks located in Nicosia, Kyrenia, and Famagusta through both face-to-face and online data collection methods. Participation was voluntary, and respondents were informed that the collected data would be used solely for academic purposes. All responses were treated confidentially and analyzed anonymously.

3.5. Data Analysis

Statistical analyses were performed using IBM SPSS Statistics 28.0 and AMOS 24.0.

Initially, descriptive statistics and normality analyses were conducted to examine the characteristics of the dataset. The internal consistency of the measurement scales was evaluated using Cronbach's Alpha, while construct validity was assessed through Confirmatory Factor Analysis (CFA). Convergent validity was examined using Composite Reliability (CR) and Average Variance Extracted (AVE). To test demographic differences, Independent Samples t-test and One-Way Analysis of Variance (ANOVA) were performed. Pearson correlation analysis was conducted to determine the relationships among the study variables. The proposed hypotheses were subsequently examined through Structural Equation Modeling (SEM). The mediating effect of Employee AI Readiness was tested using the Bootstrapping procedure, whereas the moderating effect of Digital Leadership was assessed by interaction analysis within the structural model. Statistical significance was evaluated at the 0.05 significance level.

3.6. Validity and Reliability

The psychometric properties of the measurement model were evaluated by examining reliability and construct validity. Internal consistency reliability was assessed using Cronbach's Alpha coefficients. Convergent validity was determined through Composite Reliability (CR) and Average Variance Extracted (AVE), whereas discriminant validity was

evaluated according to the Fornell–Larcker criterion. The adequacy of the measurement model was assessed using the goodness-of-fit indices χ^2/df , CFI, TLI, GFI, AGFI, RMSEA, and SRMR. The obtained fit indices indicated that the proposed measurement model demonstrated satisfactory reliability and construct validity, supporting the subsequent structural analyses.

Table 1. Demographic Characteristics of the Participants (n = 371)

Variable	Category	n	%
Gender	Female	178	48.0
	Male	193	52.0
Age	20–29	68	18.3
	30–39	141	38.0
	40–49	105	28.3
	50 and above	57	15.4
Education	Associate Degree	44	11.9
	Bachelor's Degree	198	53.4
	Master's Degree	108	29.1
	Doctorate	21	5.7
Experience	1–5 years	86	23.2
	6–10 years	129	34.8
	11–15 years	94	25.3
	16 years and above	62	16.7
Position	Customer Representative	101	27.2
	Operations Officer	92	24.8
	Specialist	76	20.5
	Middle Manager	63	17.0
	Senior Manager	39	10.5
Bank Type	Public	149	40.2
	Private	222	59.8
Province	Nicosia	169	45.6
	Kyrenia	114	30.7
	Famagusta	88	23.7
Total		371	100.0

Table 1 presents the demographic characteristics of the 371 participants included in the study. The findings indicated that 52.0% of the respondents were male, while 48.0% were female, suggesting a relatively balanced gender distribution. The majority of participants (38.0%) were between 30 and 39 years of age, followed by those aged 40–49 years (28.3%). Regarding educational attainment, more than half of the respondents (53.4%) held a bachelor's degree, whereas 29.1% possessed a master's degree. The largest proportion of employees (34.8%) had 6–10 years of professional experience, indicating that most respondents had sufficient organizational experience to evaluate AI-supported corporate communication practices. With respect to organizational position, customer representatives and operations officers constituted the majority of the sample. Furthermore, 59.8% of the respondents were employed in private banks, while 40.2% worked in public banks. In terms of geographical distribution, most participants were employed in banks located in Nicosia (45.6%), followed by Kyrenia (30.7%) and Famagusta (23.7%). Overall, the demographic profile suggests that the sample adequately represents employees working in the banking sector of the Turkish Republic of Northern Cyprus.

Table 2. Reliability and Validity Analysis of the Measurement Scales

Construct			Items	Cronbach α	CR	AVE	Factor Loadings
Artificial Intelligence-Driven Corporate Communication	Employee AI Readiness	Digital Leadership	10	.931	.943	.624	.723–.889
			8	.918	.931	.638	.734–.881
			8	.912	.926	.617	.718–.872

Organizational Resilience	9	.936	.947	.642	.731–.893
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Table 2 presents the reliability and validity results of the measurement scales used in the study. The findings showed that the Cronbach's Alpha coefficients ranged from 0.912 to 0.936, indicating excellent internal consistency for all constructs. All alpha values exceeded the recommended threshold of 0.70, confirming the reliability of the measurement instrument.

Similarly, the Composite Reliability (CR) values varied between 0.926 and 0.947, demonstrating satisfactory construct reliability. Furthermore, the Average Variance Extracted (AVE) values ranged from 0.617 to 0.642, exceeding the recommended minimum value of 0.50, thereby confirming convergent validity.

In addition, standardized factor loadings ranged between 0.718 and 0.893, indicating that all measurement items adequately represented their corresponding latent constructs. Collectively, these findings confirmed that the measurement model possessed satisfactory reliability and construct validity and was therefore suitable for subsequent statistical analyses.

Table 3. Descriptive Statistics of the Study Variables (n = 371)

Variable	Mean	SD	Interpretation
Artificial Intelligence-Driven Corporate Communication	4.13	0.54	High
Employee AI Readiness	4.06	0.58	High
Digital Leadership	3.98	0.60	High
Organizational Resilience	4.15	0.55	High

Table 3 presents the descriptive statistics of the research variables. The findings revealed that participants reported high levels of Artificial Intelligence-Driven Corporate Communication (M = 4.13), Employee AI Readiness (M = 4.06), Digital Leadership (M = 3.98), and Organizational Resilience (M = 4.15). Among the study variables, Organizational Resilience recorded the highest mean score, indicating that respondents perceived their organizations as capable of effectively adapting to environmental changes and operational challenges. Artificial Intelligence-Driven Corporate Communication also demonstrated a relatively high mean value, suggesting that AI-supported communication practices were widely adopted within the participating banks. Employee AI Readiness and Digital Leadership similarly received high evaluations, indicating that employees generally perceived themselves as prepared to work with AI technologies and considered their managers capable of leading digital transformation initiatives. Overall, the descriptive findings suggest favorable organizational conditions regarding the adoption and effective utilization of artificial intelligence within the banking sector.

Table 4. Comparison of Variables According to Demographic Characteristics

Variable	Test	AI Communication	AI Readiness	Digital Leadership	Organizational Resilience
Gender	t	2.18 (.030)*	1.66 (.098)	1.74 (.083)	2.49 (.013)*
Age	ANOVA	4.12 (.007)*	3.84 (.010)*	3.26 (.022)*	5.37 (.001)*
Education	ANOVA	5.68 (<.001)*	4.42 (.005)*	4.18 (.007)*	6.23 (<.001)*
Experience	ANOVA	3.91 (.009)*	3.26 (.022)*	3.08 (.028)*	4.84 (.003)*
Position	ANOVA	6.84 (<.001)*	5.76 (<.001)*	4.88 (.001)*	7.31 (<.001)*
Bank Type	t	2.09 (.037)*	1.42 (.156)	1.64 (.102)	2.24 (.026)*

*p < .05

Table 4 presents the results of the Independent Samples t-test and One-Way ANOVA analyses conducted to examine demographic differences. The findings demonstrated that perceptions of Artificial Intelligence-Driven Corporate Communication differed significantly according to gender, age, educational level, work experience, position, and bank type (p < .05). Similar significant differences were observed for Employee AI Readiness, Digital Leadership, and Organizational Resilience across several demographic characteristics. Employees occupying managerial positions, possessing higher educational qualifications, and having longer professional experience generally reported higher perceptions regarding AI-supported corporate communication, digital leadership, employee AI readiness, and organizational resilience. In contrast, no statistically significant differences were observed with respect to several demographic categories, indicating relatively consistent perceptions among employees across different organizational contexts. These findings suggest that demographic characteristics partially influence employees' perceptions of artificial intelligence implementation and organizational resilience within the banking sector.

Table 5. Correlation and Multiple Regression Analysis

Variables	Mean	SD	1	2	3	4
1. AI-Driven Corporate Communication	4.13	.54	1			
2. Employee AI Readiness	4.06	.58	.691**	1		
3. Digital Leadership	3.98	.60	.614**	.653**	1	
4. Organizational Resilience	4.15	.55	.752**	.711**	.676**	1

Regression Analysis

Predictor	β	t	p
AI-Driven Corporate Communication	.482	9.81	<.001
Employee AI Readiness	.308	6.74	<.001
Digital Leadership	.226	5.02	<.001

Model Statistics

R	R ²	Adjusted R ²	F	p
.842	.709	.706	297.48	<.001

$p < .01$

Table 5 presents the correlation and multiple regression analysis results. Pearson correlation analysis revealed statistically significant positive relationships among all study variables ($p < .01$). The strongest correlation was observed between Artificial Intelligence-Driven Corporate Communication and Organizational Resilience ($r = .752$), indicating a strong positive association.

The multiple regression analysis further demonstrated that the proposed regression model was statistically significant ($F = 297.48$, $p < .001$) and explained 70.9% of the variance in Organizational Resilience ($R^2 = .709$). Artificial Intelligence-Driven Corporate Communication exerted the strongest positive influence on Organizational Resilience ($\beta = .482$, $p < .001$), followed by Employee AI Readiness ($\beta = .308$, $p < .001$) and Digital Leadership ($\beta = .226$, $p < .001$).

These findings provide empirical support for the direct relationships proposed in the conceptual model and indicate that AI-supported communication practices substantially contribute to strengthening organizational resilience.

Table 6. Structural Equation Modeling, Mediation, Moderation and Hypothesis Testing Results

Hypothesis	Path	β	t	p	Decision
H1	AI Communication $\rightarrow$ Organizational Resilience	.482	9.81	<.001	Supported
H2	AI Communication $\rightarrow$ Employee AI Readiness	.691	15.18	<.001	Supported
H3	Employee AI Readiness $\rightarrow$ Organizational Resilience	.308	6.74	<.001	Supported
H4	AI Communication $\rightarrow$ Employee AI Readiness $\rightarrow$ Organizational Resilience	.213	—	<.001	Supported
H5	AI Communication $\times$ Digital Leadership $\rightarrow$ Organizational Resilience	.181	4.36	<.001	Supported

Goodness-of-Fit Indices

Index	Value	Acceptable
χ^2/df	2.31	<3.00
CFI	.958	>.90
TLI	.951	>.90

GFI	.934	>.90		
AGFI	.908	>.85		
RMSEA	.059	<.08		
SRMR	.041	<.08		
Bootstrapping Results				
Effect	β	LLCI	ULCI	Result
Mediation	.213	.146	.289	Significant
Moderation	.181	.102	.264	Significant

Table 6 summarizes the results of the structural equation model, mediation analysis, moderation analysis, and hypothesis testing. The goodness-of-fit indices indicated that the proposed structural model demonstrated satisfactory model fit, as all fit indices exceeded the recommended threshold values. The structural model revealed that Artificial Intelligence-Driven Corporate Communication had a significant positive effect on Organizational Resilience, thereby supporting H1. In addition, Artificial Intelligence-Driven Corporate Communication significantly enhanced Employee AI Readiness, while Employee AI Readiness positively influenced Organizational Resilience, supporting H2 and H3. Bootstrapping analysis confirmed that Employee AI Readiness partially mediated the relationship between Artificial Intelligence-Driven Corporate Communication and Organizational Resilience, providing support for H4. Furthermore, Digital Leadership significantly moderated the relationship between Artificial Intelligence-Driven Corporate Communication and Organizational Resilience, indicating that the positive impact of AI-supported communication became stronger in organizations characterized by higher levels of digital leadership. Accordingly, H5 was also supported. Overall, all proposed hypotheses were supported, confirming the validity of the conceptual model and highlighting the importance of AI-supported corporate communication, employee AI readiness, and digital leadership in enhancing organizational resilience within the banking sector.

5. Conclusion And Recommendations

5.1. Conclusion

This study examined the effect of Artificial Intelligence-Driven Corporate Communication on Organizational Resilience among employees working in public and private banks operating in Nicosia, Kyrenia, and Famagusta in the Turkish Republic of Northern Cyprus. In addition, the study investigated the mediating role of Employee AI Readiness and the moderating effect of Digital Leadership within the proposed conceptual model. The findings demonstrated that Artificial Intelligence-Driven Corporate Communication positively and significantly influenced Organizational Resilience. The results indicate that banks effectively integrating artificial intelligence into their corporate communication processes are better able to adapt to environmental uncertainty, maintain operational continuity, and respond more rapidly to organizational challenges. AI-supported communication systems were found to facilitate information sharing, strengthen organizational coordination, and improve communication quality, thereby enhancing organizational resilience. The study further revealed that Employee AI Readiness partially mediated the relationship between Artificial Intelligence-Driven Corporate Communication and Organizational Resilience. This finding suggests that employees' knowledge, skills, and willingness to utilize AI technologies play a critical role in translating technological investments into organizational outcomes. Furthermore, Digital Leadership significantly strengthened the relationship between AI-driven corporate communication and organizational resilience, indicating that leaders with strong digital competencies create organizational conditions that maximize the benefits of AI-supported communication. Overall, the findings contribute to the literature by integrating corporate communication, artificial intelligence, employee AI readiness, digital leadership, and organizational resilience into a comprehensive research model. The study also provides empirical evidence from the banking sector in the Turkish Republic of Northern Cyprus, where limited research has examined these variables simultaneously.

5.2. Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. Banks should further integrate artificial intelligence into their corporate communication processes to improve organizational coordination, communication efficiency, and resilience.

2. Continuous training programs should be implemented to enhance employees' AI knowledge, digital competencies, and readiness to effectively utilize artificial intelligence technologies.
3. Banking institutions should strengthen digital leadership capabilities by providing leadership development programs that support digital transformation and innovation.
4. Organizational policies promoting knowledge sharing, continuous learning, and employee participation should be developed to maximize the effectiveness of AI-supported communication systems.
5. Future studies should examine the proposed research model in different sectors, such as healthcare, tourism, higher education, and public administration, and incorporate additional variables such as AI literacy, digital resilience, organizational agility, or innovation capability to further extend the literature.

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COMPETENCE-BASED APPROACH AND QUALITY ASSURANCE IN THE MATHEMATICAL TRAINING OF FUTURE PRIMARY SCHOOL TEACHERS

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ABSTRACT

In the contemporary era of globalization, the integration of higher education systems into the European Higher Education Area (EHEA) and the alignment with the Bologna Process have prioritized quality assurance in pedagogical training. This research addresses the limitations of the traditional "academic knowledge transmission" model, which no longer satisfies student-centered paradigms or modern labor market requirements. Evidence suggests that while graduates may possess deep theoretical knowledge of elementary mathematics, they frequently encounter methodological challenges in implementing interactive pedagogy and managing learning environments. This study analyzes the role of the competence-based approach in harmonizing mathematical content knowledge with pedagogical-methodological proficiency. Through a comparative examination of international quality standards (ESG) and national curricula, the research evaluates the integration of mathematical methodology with core specialty subjects. Findings indicate that establishing a sustainable quality culture necessitates a transformation in instructional strategies, where "soft skills," digital literacy, and pedagogical innovation become fundamental pillars of primary teacher education.

Keywords: quality assurance, mathematics education, competence-based approach, teacher training, mathematical literacy, student-centered learning.

Introduction

As global integration intensifies, the primary objective of higher education is to cultivate competitive professionals equipped with robust competencies. The integration of the Republic of Azerbaijan into the European Higher Education Area (EHEA) necessitates a paradigm shift in pedagogical training quality. Within this framework, quality assurance transcends mere normative compliance; it is defined by the effective application of theoretical frameworks in practical pedagogical settings (ESG, 2015). Despite these goals, existing literature indicates that traditional transmissive models remain insufficient for addressing the learning needs of "Generation Z" (Həmzəyev, 2021).

Aim of the Study

The primary objective of this research is to analyze the function of the competency-based approach in preparing future primary school teachers. Specifically, it explores mechanisms to ensure the organic unity between mathematical content and pedagogical methodology, focusing on fostering mathematical literacy and pedagogical reasoning through subjects such as "Propaedeutics of Algebra."

Significance of the Research

This study contributes to bridging the theoretical-practical gap in primary mathematics education. Since the foundations of algorithmic thinking and a scientific worldview are established in the early years, the preparation of primary teachers is of strategic importance. This research provides actionable recommendations for curriculum developers and institutions to transform assessment criteria and instructional strategies.

Theoretical Framework

The study is anchored in the Competency-Based Approach and the KSA (Knowledge, Skills, Attitude) model, which defines competence as the integration of these three domains (Niss, 2003). Furthermore, the research utilizes Shulman's (1986) Pedagogical Content Knowledge (PCK) model to distinguish between general mathematical knowledge and the specialized knowledge required for teaching. Additionally, the Concrete-Pictorial-Abstract (CPA) model proposed by Bruner (1966) provides the basis for navigating cognitive transitions in elementary mathematics.

Literature Review

The evolution of teacher education reflects a global shift from teacher-centered to learner-centered paradigms. Historically, teacher preparation emphasized advanced mathematical content under the assumption that advanced knowledge naturally improves teaching efficacy. However, Shulman (1986, 1987) introduced PCK to argue that effective teaching requires a unique blend of content and pedagogy. Expanding this, Ball et al. (2008) developed the framework of Mathematical Knowledge for Teaching (MKT), distinguishing between Common Content Knowledge (CCK) and Specialized Content Knowledge (SCK).

In the context of Azerbaijan, Həmzəyev (2021) observed that while pre-service teachers often exhibit strong CCK, they frequently lack the SCK necessary to diagnose student misconceptions. International assessments further support this; for example, OECD (2019) PISA results emphasize that student performance correlates higher with cognitive activation strategies than with rote memorization. Aligning national teacher training with European Standards (ESG) thus requires a renewed focus on these specialized pedagogical competencies.

Methodology

Research Design

This study adopts a qualitative research design based on a descriptive survey model and systematic document analysis. Qualitative methodology was selected to facilitate a comprehensive understanding of the structural and pedagogical challenges in teacher preparation, prioritizing the "how" and "why" of instructional efficacy over purely statistical frequencies.

Data Sources

The primary data corpus for this research consists of the *Standards and Guidelines for Quality Assurance in the European Higher Education Area* (ESG, 2015), the national curriculum standards for primary teacher education in Azerbaijan, and a curated selection of peer-reviewed academic literature focusing on mathematics education and competency-based paradigms.

Data Analysis and Procedural Stages

The collected qualitative data were processed using the Content Analysis method. To ensure a systematic investigation of the research problem, the analysis was conducted in three distinct, progressive stages:

- **Stage 1: Coding International Standards.** The initial phase involved identifying and coding the core requirements of the ESG and other international benchmarks. Specific focus was placed on identifying indicators of "student-centered learning," "outcomes-oriented instruction," and "competence-based assessment."
- **Stage 2: Gap Analysis and Comparative Identification.** The second stage involved mapping these international codes against current local practices and curricula in Azerbaijani teacher preparation. This comparative analysis allowed for the identification of specific methodological gaps between global quality expectations and domestic instructional realities.
- **Stage 3: Development of Pedagogical Scenarios.** In the final stage, the research synthesized the findings from previous phases to develop specific pedagogical scenarios and case studies. These scenarios demonstrate practical mechanisms for bridging identified gaps, utilizing theoretical models such as Shulman's PCK and Bruner's CPA to transform mathematical instruction from theory to practice.

Findings and Discussion

The Necessity of Mathematical Reasoning and Modeling:

Findings indicate that a competent teacher must move beyond the rote application of formulas. For example, when teaching area calculation, instead of merely stating $S = a \times b$, the teacher should guide students to model the surface as a grid of unit squares. This fosters modeling and justification competencies (Van de Walle et al., 2013). Inquiry-based questions – such as "How can we visually represent a space of 24 sq.m?" – allow students to perceive mathematics as a geometric model rather than a mere number.

The Role of Pedagogical Content Knowledge (PCK)

The PCK model remains the backbone of modern teacher preparation. As Shulman (1986) suggests, academic proficiency does not guarantee effective teaching if cognitive barriers are not identified. For instance, in fraction comparison, a student may assume $\frac{1}{3} > 1\frac{1}{2}$ based on their natural number knowledge. A teacher with robust PCK identifies this "natural number bias" and uses visual "cake" or "pizza" models to prove that more partitions result in smaller individual units.

Modeling in Equations: The Balance Scale Method

A major cognitive hurdle in primary algebra is the misconception of the equals sign (=) as an operational command rather than a sign of equivalence. Utilizing the "Balance Scale Model" during the concrete stage allows students to intuitively grasp the unknown variable (x). By transitioning through the three stages of the CPA model – from a physical scale (Concrete) to board diagrams (Visual) to algebraic symbols (Abstract) – future teachers can effectively teach the principle of maintaining equality (Bruner, 1966).

General Discussion and Conclusion

The results of this study provide strong empirical support for a paradigm shift toward a competency-based model in teacher education. Consistent with Shulman's (1986) framework, the analysis confirms that Common Content

Knowledge is insufficient for effective pedagogical delivery. The success of the modeling strategies identified – specifically the transition through the CPA stages – validates the necessity of visualization tools in overcoming cognitive barriers (Bruner, 1966).

Adhering to the ESG (2015) standards requires a structural transformation in Azerbaijan's teacher training programs. Curricula must prioritize diagnostic modeling and inquiry-based strategies over theoretical instruction. Such a transition is vital for cultivating a new generation of educators capable of fostering deep conceptual understanding and mathematical literacy as defined by the OECD (2019).

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CONSTRUCTIVE TRAINING AND ITS ROLE IN THE STUDENT-CENTERED EDUCATION MODEL

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ABSTARCT

The article analyzes the essence of constructive learning, its functional role in the pedagogical process and its contributions to the student-centered education model in a scientific-theoretical context. The study examines the main principles of constructive learning, its impact on the formation of the student as an active subject in the learning process, and the possibilities of applying this approach in a modern educational environment.

Constructive learning, as one of the main pedagogical approaches at the heart of the modern student-centered education model, creates conditions for students to actively assimilate knowledge, apply it in new situations by connecting it with personal experience, and develop high-level thinking skills.

As a result of the application of constructive learning, the educational process becomes more democratic, flexible, individualized and effective. This approach also makes a significant contribution to the preparation of specialists with competitive and professional competencies in accordance with the requirements of modern society.

The article comprehensively examines the theoretical foundations of constructive learning, its functional role in the modern student-centered education model, and its possibilities of application in the pedagogical process. The essence of constructive learning is that knowledge is not presented to the student in a ready-made form; on the contrary, the student independently constructs and interprets that knowledge based on his/her previous experiences, cognitive activity and social interactions. This approach ensures the transition of learning from passive perception to active knowledge construction and strengthens the student's position as an active subject in the learning process.

The student-centered education model is characterized as an approach that takes into account the student's interests, learning style, current level of knowledge and individual development needs. Constructive learning, which is one of the main components of this model, increases the cognitive activity of students, strengthens their self-development, research skills and independent decision-making ability. Lessons based on a constructive approach create favorable conditions for students to learn in an environment of social cooperation, connect knowledge with real situations, and develop critical, analytical and creative thinking skills.

The article also pays special attention to the changing role of the teacher in the implementation of constructive learning. In this context, the teacher, moving away from the traditional function of knowledge transmitter, acts as a person who organizes, directs and facilitates the development of the student. This approach also affects the assessment process: the widespread use of alternative methods such as formative assessment, portfolio method, self-assessment, and peer assessment improves the quality of the teaching process and ensures the transparency of learning.

Keywords: Constructive learning, Student-centered education, Active learning, Independent learning, Facilitator role in training, Project-based learning, Alternative assessment, Experience-based learning.

Introduction

Global changes observed in the education system in the 21st century have created a need for skill-oriented, personality-oriented and activity-based learning models rather than knowledge. In this context, constructive learning stands out as one of the main directions of modern pedagogy. The constructive approach transforms the student from a passive listener into an active learning subject, creating favorable conditions for him to interpret knowledge, apply it in new situations and connect it with personal experience. The student-centered education model is built on the principles of activity, independence and personal development, ensuring the active participation of the learner in the learning process.

Constructive learning (constructivist learning) involves the process of creating knowledge based on the student's existing cognitive structures, thought processes, and personal experience. This approach is characterized as not simply transferring knowledge, but rather building a knowledge system that is formed as a result of the student's cognitive activity and expands in a logical sequence. Constructive learning is a learning model based on creative and practical-cognitive activity; where knowledge is not presented in a ready-made form by the teacher, but is reconstructed, deepened, and given meaning as a result of the student's active intellectual activity.

In this model, learners establish connections between existing knowledge and new knowledge based on their internal cognitive levels, personal experiences, and sensorimotor structures, and as a result, creative thinking is formed. The

creative cognitive process occurs both individually and in a collaborative (group and team activity) environment. This allows the knowledge construction process to be organized at different levels, depending on the nature of the student's activity. Bruner's constructivist philosophy forms the basis of his educational theories, based on the idea that knowledge is actively constructed through experience and conscious cognitive activity.

Bruner explains learning as an active process in which the student creates knowledge, moving away from passive perception. In his opinion, learning occurs as a result of connecting new information with existing knowledge structures and personal experience. According to Bruner's concept, when a learner acquires new knowledge, he reconciles it with previous knowledge, individual cognitive structures, and the cultural-historical experience of society, and integrates it into the existing framework of meaning. The learning process is formed on the basis of the alignment of knowledge acquired as a result of personal cognition with socio-historical experience, which reveals both the individual and social nature of knowledge construction.

Fatma Bunyatova's constructive teaching philosophy is aimed at ensuring that pupils and students independently progress in education with the help of mental operations, build on their previous knowledge and experience, create "their own knowledge" and individual understandings, and also connect the new knowledge they have acquired with existing knowledge structures within a whole system. Thus, constructive teaching is characterized as a dynamic process based on creative and cognitive operations. Pupils or students perform logical operations on the information they receive from the teacher and textbooks, build their own ideas based on their internal imagination and understandings, and form their knowledge. This creative process can be carried out both individually and in the form of cooperation in interactive environments (discussion, dialogue, group and team activities, debate, etc.). Fatma Bunyatova's constructive teaching philosophy also reflects the synthesis of Eastern and Western pedagogical systems. This synthesis is based on cognitive mobility, understanding from part to whole, and organized cognitive movement from whole to part. That is, the pupil or student creates a knowledge system that is formed in a consistent and logical manner by connecting previous knowledge with new knowledge. Such an approach ensures the continuous, gradual and logical development of the pupil or student's cognitive activity.

In the constructive model, which is closely related to thinking operations, the student interacts with the knowledge presented to him, compares it with existing cognitive structures, and ultimately forms the logical foundations of his own knowledge system. A student with developed logical thinking skills is able to draw correct conclusions, determine cause-and-effect relationships, move from one conclusion to another, and acquire sequential thinking skills.

The essence of constructive learning is that the student is not a passive recipient of information in the perception of knowledge, but, on the contrary, acts as an active participant in the learning process. This learning model directs the student to self-improvement and creates favorable conditions for the continuous development of his cognitive activity. According to the constructive approach, the assimilation of knowledge does not result from the reception of ready-made information, but from the establishment of connections between existing experience and new information. This is the process of internalizing, restructuring and raising knowledge to a higher level of cognition.

Constructive learning involves the integration of knowledge acquired in the educational environment and social experience. The student draws new conclusions by linking both the knowledge presented by the teacher and the phenomena observed in everyday life with existing cognitive structures, substantiates them and reorganizes them in his cognitive system. This process leads to the logical expansion and deepening of knowledge and the formation of more complex cognitive structures.

Such a learning model develops the student's meta-thinking skills - that is, the ability to understand, evaluate and manage their own thought processes. The student not only acquires knowledge, but also understands the logical operations and thinking strategies through which this knowledge was achieved. This allows for more efficient, purposeful and systematic planning of future learning activities.

The scientific and philosophical foundations of constructivist learning were formulated by leading psychologists and educators of the 20th century. Each of them, having studied various aspects of constructivist cognition, scientifically substantiated the importance of this approach in modern learning models.

American psychologist and learning theorist Jerome Bruner is considered one of the main intellectual architects of constructivist learning. According to him: knowledge should not be presented to the learner in a ready-made form, the student should discover this knowledge, the learning process should be based on the principle of "learning by discovery".

Bruner describes learning in three main forms of presentation:

- 1. Active stage – knowledge is acquired through action and movement.**
- 2. Iconic stage – the meaning of knowledge is expressed through images and visual representations.**
- 3. Symbolic stage – knowledge is expressed through language, symbols, and logical structures.**

This model provides for the gradual and effective acquisition of knowledge in the constructivist learning process. Bruner also emphasizes that learning depends on the cultural context: when the learner acquires new knowledge, he or she reconciles it with the socio-cultural experience of society.

The psychological foundations of constructivism are closely linked to the theory of cognitive development of Swiss scientist Jean Piaget. According to Piaget: the learner actively constructs knowledge, and cognitive development occurs through the interaction of the processes of "assimilation" and "accommodation."

Assimilation is the process of adapting new information to existing cognitive structures. **Accommodation** is the process of adapting and modifying existing cognitive structures to new information. Bruner and Piaget's concepts justify the active, gradual, cultural and cognitively contextual nature of constructivist learning.

Constructive learning, in accordance with the basic principles of Piaget and other cognitive theories, creates conditions for two processes to occur harmoniously: the learner connects existing knowledge with new information, expands and deepens the cognitive structure. Piaget connects cognitive development with age periods and emphasizes that:

- At each age stage, learning should be organized in accordance with individual cognitive capabilities,
- Meaningful learning is impossible without the student's active thinking activity.

Russian psychologist Lev Vygotsky developed the social aspect of constructivism. His theory of the "zone of proximal development" (ZPD) is fundamental to the modern application of constructivist learning. According to Vygotsky, learning occurs through social interaction, with the teacher or more experienced learners providing cognitive support to the learner or student, which bridges the gap between the learner's or student's actual abilities and potential capabilities. This approach explains the central role of cooperative learning, group work, and learning dialogue in the constructivist model.

The reforms implemented in the Azerbaijani educational space in recent years have created a favorable pedagogical environment for the application of constructivist learning. This process has been accelerated, in particular, by the introduction of the following factors:

- new educational standards,
- competency-based curricula,
- European Credit Transfer System (ECTS),
- active learning methods.

In the modern era, the role of constructivist learning has increased even more. The social, economic and technological challenges of the 21st century require the training of individuals with creative, critical and analytical thinking skills. In a globalizing world, generating new ideas and innovative solutions, adapting existing knowledge to new contexts and having creative application skills are considered key competencies.

Constructive learning fully meets these requirements. Within the framework of this model, the student:

- consciously develops his knowledge;
- forms research and analysis skills;
- develops problem-solving skills;
- uses existing knowledge creatively to create new ideas;
- takes into account both personal and social experience in the process of knowledge construction.

Thus, constructive learning activates individual and social cognitive mechanisms in each student, forming him as a creative, thinking and responsible personality in the learning process. The constructive approach builds learning not only as a process of acquiring knowledge, but also as a process of creating knowledge, forming new meanings and applying knowledge in real situations. Knowledge is not transferred to the student in a ready-made form; on the contrary, the learner forms, deepens and assimilates knowledge through his personal experience, thinking and cognitive activity.

The main principles of constructive learning are as follows:

1. Active learning – the student is actively involved in the learning process; he/she explores, compares, discusses and draws conclusions.

2. Building on prior knowledge – new knowledge is linked to the student's existing experience and ensures continuity of learning.
3. Social interaction – group work, discussions and projects enhance knowledge construction.
4. Reflection – the student reflects on what he/she has learned, determines his/her path of personal development and plans his/her future activities.
5. Problem solving and research orientation – the practical application of knowledge is based on real-life situations and allows the student to develop research skills.

In modern times, many of these principles of constructive learning are more widely applied in seminars and practical classes in higher education institutions.

In the modern era, the global flow of information, rapid technological development and changing demands of the labor market require individuals to have creative thinking, analytical skills, problem-solving abilities and high adaptability. For this reason, the constructivist learning model constitutes the main philosophy of student-centered education. In this model, the role of the teacher changes: he is no longer just a transmitter of knowledge, but acts as a facilitator, guide and motivator of the learning process.

A student-centered education system gives students independence and responsibility in the learning process. The quality of learning outcomes is directly based on the responsibility of the student. This independence implies that students have the skills to prepare teaching materials and manage the learning process. As a result, students become more independent and easily adapt to their future professional activities.

At the same time, a student-centered education system allows students to learn and develop skills such as teamwork, written and oral communication, prioritizing tasks and critical analysis more effectively. The student-centered education model is a pedagogical philosophy that takes into account the interests, experiences, learning styles, and individual characteristics of the student. The main goal of this model is to educate the student as an independent thinker, entrepreneur, creator, and an individual who can manage his or her own learning process.

Constructive learning directly corresponds to the essence of student-centered education and makes it more functional. This approach develops the following skills in students:

- independent thinking skills,
- creative approach skills,
- analytical and critical thinking,
- self-management skills,
- communication and collaboration culture.

As a result of the application of constructive learning in student-centered education, learners:

- become "authors" of their own knowledge,
- take personal responsibility for learning,
- develop argumentation and discussion skills,
- acquire skills that can be used in life and professional activities.

Thus, constructivist learning plays an important role in the implementation of the student-centered education concept, and as a result: the student's motivation to learn increases, knowledge is absorbed more deeply and long-term, the student acquires critical and analytical thinking skills, social skills such as teamwork, communication and cooperation develop, and the student becomes a creative builder of his own knowledge.

This approach develops not only academic skills in students, but also 21st century competencies - problem solving, creativity, digital literacy and independent learning skills.

Student-centered education and teaching play an important role in increasing students' motivation, self-analysis and participation in the learning process. Therefore, the design of educational programs, the choice of teaching methods and the assessment of results should be carefully considered.

The implementation of student-centered education and teaching encompasses the following principles:

- respecting the diversity of students and meeting their individual needs by using new, variable teaching methods in education;
- considering and implementing different ways of teaching where appropriate;
- using different pedagogical methods effectively and purposefully;
- constantly evaluating and adapting teaching forms and pedagogical methods;
- stimulating a sense of independence in students, provided that they receive appropriate guidance and support from the teacher;
- promoting the establishment of mutually respectful relationships between students and teachers;

- ensuring the establishment of appropriate procedures for addressing student complaints.

The implementation of constructivist learning in modern higher education institutions creates broad methodological opportunities and makes a significant contribution to improving the quality of the educational process. Interactive teaching methods – strategies such as project-based learning, research-oriented assignments, debates, group presentations, case studies and portfolio assessment – intensify the process of students’ knowledge construction. These methods ensure that students do not passively learn the subject, but also actively analyze, correlate, and apply knowledge, which creates conditions for the formation of their higher-level thinking skills.

Directions for developing a student-centered education system in higher education institutions:

- First of all, systematic training related to “Student-Centered Learning” should be increased for all academic staff;
- Increasing support for higher education institutions in promoting pedagogical innovations in student-centered learning contexts and fully utilizing the potential benefits of digital technologies for teaching and learning;
- Student knowledge should be assessed on the basis of portfolios, projects, problem analysis, article analysis, team research, team projects, discussions and debates, field trips and other practical activities;
- A strong connection between teaching, practice and research should be created at all levels of education and incentives should be created for universities, teachers and students to strengthen activities that help develop creativity, innovation and entrepreneurship;

The benefits of a student-centered education system are many, and they are as follows:

For students:

- Opportunity for independent learning;
- Development of self-management and decision-making skills;
- Having clear learning goals;
- Developing learning strategies;
- Understanding rights and responsibilities;
- Developing innovative and creative thinking skills;
- Developing independent thinking skills by analyzing and synthesizing topics.

For professors/faculty:

- Moving from an active teaching process to an active guiding process;
- Sharing responsibility with students;
- Promoting active and collaborative learning;
- Applying creative assessment methods;
- Focusing on deep learning, problem solving, creativity, and entrepreneurship;
- Developing students' self-observation, self-assessment, and self-development skills;

For higher education institutions:

- Improving educational resources and support services for teachers and students;
- Developing curricula;
- Creating a network of cooperation between students, universities, the business world and other stakeholders;
- Developing flexible learning paths;
- Developing student projects and research;
- Establishing clear procedures to ensure student satisfaction;
- Establishing internal structures for quality assurance;
- Strengthening academic integrity and commitment to ethical behavior in the educational process;

For an inclusive and digital transformation of the learning environment:

- Widespread use of electronic learning resources, LMS (Learning Management System) platforms.
- Development of hybrid and online teaching models.
- Improving accessible teaching materials for inclusive education and the environment for students with special needs.

To strengthen quality assurance mechanisms:

- Taking student feedback into account in the teaching process.
- Participation of student representatives in internal quality assurance systems.
- Increasing compliance with international accreditation and rating standards.

Constructive learning and student-centered teaching fully meet these requirements. Within this model, the formation of the student as an active learning subject at the center of the educational process, the assimilation of knowledge based on the previous experience of the individual, and the organization of the learning environment in an interactive, flexible and collaborative manner are the main priorities.

Portfolio assessment allows you to monitor the student's personal development by evaluating his best works and development path. It is not based only on test and exam results, but involves assessing the body of work created by the student over a certain period of time. The main purpose of portfolio assessment is to monitor the student's development over time, identify strengths and weaknesses, reveal creative and critical thinking skills, create an opportunity for the student to self-assess and ensure that the teacher gives a more objective assessment. This approach increases students' interest in the lesson. The advantages of portfolio assessment are also significant: skills that are not included in the exam are taken into account, each student can show their development at their own pace, fair assessment is carried out based on real results, and the student becomes more responsible and creative.

The student-centered education model assumes that the main focus in the learning process is shifted from the teacher to the student; in this approach, the student's needs, interests, learning style and individual characteristics play a leading role in determining the content and methods of teaching. Student-centered education is a pedagogical approach that encourages students to engage in research activities, ask questions, participate in projects and independently acquire knowledge. It takes into account the learning style, skills and interests of each student and creates conditions for individualization of the educational process. The constructive approach supports the selection of flexible, adaptive and interactive teaching methods, taking into account the differences between students. In this framework, the student is not just a passive recipient of knowledge, but an active participant in his own learning process, making decisions and evaluating the results. He does not absorb information as it is; on the contrary, he forms his own assessment criteria, draws conclusions and seeks alternative solutions.

This process accelerates the development of analytical thinking, problem-solving skills, creative approach and critical thinking. In a constructive learning environment, teamwork, effective communication, social interaction and cooperation skills are formed more intensively. The meaningful, practical and life-related nature of the learning process increases the student's internal motivation and creates conditions for the development of continuous learning habits. The teacher is not a transmitter of knowledge; he acts as a facilitator who organizes the learning process, guides the student and shapes the learning environment. The constructive learning approach ensures the development of both life and professional skills of students through projects, problem-solving activities, research tasks and training based on real situations. The role of the teacher here changes dramatically: he is not a transmitter of knowledge, but an organizer, facilitator and guide of the learning process. This change has a positive impact on the quality of teaching and students' self-awareness.

All of the above factors form the conceptual basis of the student-centered educational process. A student-centered approach places the student's individual characteristics, learning style, and developmental needs at the center of educational activities and creates conditions for the continuous and purposeful development of his knowledge, skills, and competencies.

This approach is especially relevant in the context of the rapidly changing socio-economic and technological requirements of the modern era. Thus, student-centered and constructive teaching methods stimulate the formation and strengthening of 21st century skills such as analytical thinking, problem solving, collaboration, information literacy, and creative activity. As a result, the student becomes an active participant in the educational process and is able to consistently ensure his intellectual, social, and professional development.

Purpose

The main purpose of this text is to justify the importance of implementing a constructive learning and student-centered teaching model in higher education institutions, and to show the advantages that this model creates for both the faculty and the universities at the institutional level. The goal is to support pedagogical approaches that serve to improve the quality of the higher education system by scientifically and practically substantiating the formation of a learning environment that places the student at the center of the educational process, ensures his active role in the construction of knowledge, and is based on modern pedagogical innovations.

Importance

The application of the constructive learning and student-centered teaching model is of great importance in the higher education system at both the pedagogical and institutional levels. This approach directs the process of students' knowledge acquisition to active, reflective and creative activities, ensuring the development of their analytical thinking, problem-solving, research and collaboration skills. The model adapts the function of the teacher to modern educational requirements, strengthens his role as a facilitator and mentor, and creates an opportunity to form an interactive and dynamic learning environment.

From an institutional point of view, this approach increases the quality of education in higher education institutions, accelerates adaptation to international standards, and expands the application of digital and innovative teaching methods. At the same time, the application of student-centered solutions increases the competitiveness of universities, strengthens ties with the labor market, and creates conditions for a higher level of professional training of graduates. The constructive learning and student-centered teaching model is of strategic importance in the modernization of higher education, increasing its quality, and training specialists who meet the requirements of modern society.

Theoretical Basis

The constructivist learning and student-centered teaching model is based on the scientific principles of modern pedagogical theories—in particular, constructivism, the humanistic educational approach, and socio-psychological learning concepts. According to constructivism, knowledge is not transmitted in a ready-made form, but is a dynamic process that the student “constructs” on the basis of his/her existing experiences, prior knowledge, and interactive activities. This theoretical approach considers the student as an active subject at the center of teaching and explains learning in terms of psychological processes such as meaning-making, discovery, and reflection.

The humanistic educational approach emphasizes the student's individual development, self-realization, intrinsic motivation, and personal potential, and requires the learning environment to be built on cooperation, support, and understanding. These principles form the essence of student-centered teaching and consider the harmonious development of emotional, social, and cognitive factors in the learning process to be important.

The socio-constructivist approach emphasizes that knowledge is formed as a result of social interaction, discussion, collaboration, and joint activity. In this context, the teacher, playing the role of a facilitator, ensures the active integration of the student into the learning environment, creates conditions for the application of research-oriented and interactive teaching strategies. The theoretical basis of constructive learning and student-centered teaching is based on basic scientific principles such as active assimilation of knowledge by the student, the formation of learning by social and psychological factors, and the dynamism of the learning process. This theoretical framework creates a solid scientific basis for the application of updated teaching models in modern higher education.

Literature Review

Constructive learning and student-centered teaching model is one of the widely studied directions in modern pedagogy and educational science. Literature shows that the scientific foundations of this approach began to be formed in the late 19th and early 20th centuries with J. Piaget's theory of cognitive development and L. Vygotsky's concept of socio-cultural learning. Piaget's constructive cognitive model emphasizes that knowledge is actively constructed by the student or learner, while Vygotsky's theory emphasizes that social interaction and the zone of proximal development play a decisive role in learning.

Representatives of humanistic pedagogy — J. Rogers and A. Maslow — especially emphasize the importance of the individual's internal motivation and need for self-actualization in the creation of a student-centered learning environment. Their research shows that a teaching model that values the student, chooses him, and involves him in the decision-making process creates higher academic achievement and socio-emotional development.

In modern times, numerous empirical studies have been conducted on the application of constructivist learning and student-centered approaches. B. Bruner's theory of inquiry-oriented learning shows the importance of teaching methods that support the development of students' research, problem-solving and experience-based skills. The “Constructive Alignment” model proposed by J. Biggs and C. Tang is based on the principle of systematically aligning learning objectives, teaching activities and assessment methods.

Recent studies have shown that the student-centered education model has a positive effect not only on the development of knowledge and skills, but also on students' attitudes towards learning, motivation and self-regulation skills (Weimer, 2013; Lea, Stephenson & Troy, 2003). With the widespread use of digital technologies, the integration of interactive learning environments and electronic resources into student-centered teaching has become particularly relevant. In this direction, researchers such as R. Mayer, D. Jonassen and M. Moore have extensively studied the relationship

between the student-centered approach and multimedia learning theory, distance learning and interactive learning models.

A general analysis of the literature shows that constructive learning and student-centered teaching create an effective scientific and methodological basis for improving the quality of teaching in higher education, increasing student activity and forming modern skills. The results of various pedagogical theories and empirical studies confirm the effectiveness of applying this model in teaching and contribute to the development of innovative approaches in the higher education environment.

Methodology

This article uses theoretical and analytical methods to investigate the application and impact of the constructivist learning and student-centered teaching model. Within the framework of the theoretical method, the existing pedagogical literature, research studies, international practices and conceptual approaches were analyzed. Through the analytical method, the principles, advantages and implementation mechanisms of constructivist and student-centered teaching models in different education systems were comparatively evaluated.

In addition, the results of empirical experiments were taken into account, and indicators such as student activity, knowledge construction and the development of analytical skills were examined. The article also evaluates the integration of digital technologies and interactive learning methods into student-centered teaching in a modern higher education environment from a methodological point of view. The methodology is based on both theoretical analysis, comparative research, and practical observation and experiments, which allows us to show in detail and systematically the possibilities of applying constructivist learning and student-centered teaching.

Conclusion

The theory of constructivist learning, in addition to constituting the scientific basis of student-centered educational strategies, serves to strengthen the student's personal development, creative thinking and analytical approach. The widespread application of this approach in the education system creates conditions for students to actively perceive and acquire skills that can be used in real life, rather than passively assimilate knowledge. Thus, constructivist learning plays an important role in the development of student-centered education as one of the main directions of the modern education model.

Constructivist learning, by ensuring the active participation of students in the learning process, allows them to form the competencies required in their future professional activities - analytical thinking, problem solving, cooperation, communication and creativity. This approach is an effective pedagogical mechanism that ensures not only the assimilation of knowledge, but also the cultivation of thinking, research, creative and socially active personalities.

The results of the study show that constructivist learning increases students' motivation, makes the learning process meaningful, ensures more sustainable assimilation of knowledge and turns them into practical skills. Constructive methods such as problem-based learning, project-based learning, research assignments, and reflective activities ensure that students actively participate in learning, discover their potential, and apply knowledge to their lives. As a result, the methods and strategies applied in the student-centered education process significantly strengthen students' independent learning abilities, develop their critical thinking, problem-solving, and self-regulation skills, and thus create favorable conditions for providing professional training in line with the dynamic challenges of the labor market.

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DIGITAL AGE AND THE DEVELOPMENT OF SPEECH AND THINKING IN PRIMARY SCHOOL STUDENTS: NEW METHODS AND APPROACHES

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ABSTRACT

In the modern era of rapidly advancing digital transformation, the development of speech and thinking in primary school students has become one of the key pedagogical priorities in the education system. Digital tools introduce new content to children's cognitive and communication activities, creating a need for teachers to implement innovative methods that enhance language skills, logical thinking, and creative cognition. This article explores contemporary approaches, interactive environments, and the integration of technologies into instruction aimed at developing students' speech and thinking in the digital age.

The study shows that multimedia resources, gamified learning platforms, and collaborative digital tasks significantly improve students' oral expression, vocabulary, logical reasoning, and ability to articulate thoughts coherently. The use of digital storytelling, interactive reading programs, and audio-visual materials strengthens students' speech structure, text creation habits, and reflective thinking skills. In addition, inquiry-based learning, problem-solving activities, and virtual modeling enhance students' analytical thinking and cognitive flexibility.

The role of the teacher is particularly emphasized. Teachers must guide students to use digital tools purposefully, safely, and in a balanced manner. The results indicate that applying innovative digital methods not only improves the quality of learning but also prepares students for future digital society. Overall, the research confirms the necessity of applying new methods and approaches to the development of speech and thinking in the digital era.

Keywords: digital education, speech development, thinking development, primary school students, innovative methods.

Introduction

The contemporary education system is significantly influenced by rapidly developing digital technologies. This process affects primary school students' learning environments and the formation of their speech and cognitive skills. The use of digital resources—including interactive whiteboards, e-textbooks, learning platforms, and game-based programs—increases students' cognitive engagement and develops their creative and critical thinking abilities.

The aim of this study is to investigate new pedagogical methods and approaches that promote the development of speech and thinking in primary school students in the digital era and to identify effective teaching strategies in this context.

Speech is a crucial psychological process through which a person expresses thoughts and facilitates social and cognitive development. Thinking refers to the ability to perceive the environment, establish connections between events, draw conclusions, and form new knowledge. Pedagogically, speech and thinking complement each other: proper speech development strengthens logical reasoning, while cognitive development enhances vocabulary and expressive skills.

Aim

To develop a scientifically grounded approach for enhancing speech and cognitive abilities of primary school students through digital learning tools and modern pedagogical methods; to determine how digital society influences students' speech and thinking and its outcomes in the learning process; to assess the impact of interactive videos, digital games, animations, and multimodal resources on students' oral skills; to analyze the role of e-books, interactive texts, and digital reading environments in vocabulary and expressive skill development; to study the effect of problem-solving digital tasks and research activities on cognitive and analytical thinking; to evaluate the contribution of digital communication with teachers and peers to speech development; to justify the teacher's coordinating, guiding, and motivational role in digital learning; to propose methodological recommendations for safe, purposeful, and balanced use of digital resources; to observe and analyze changes in students' speech and cognitive skills in digitally enriched classrooms; and to suggest models and approaches adaptable to local educational contexts based on international experience.

Significance

Digitalization creates new opportunities in the learning process while demanding different pedagogical approaches from teachers. Interactive platforms, digital games, simulations, and visual resources engage students and motivate them to learn. Through these tools, students not only acquire knowledge but also analyze it, form connections, and generate creative outcomes. Thus, digital learning environments provide favorable conditions for developing speech and thinking in primary school students.

Primary education is a stage where a child's personality, cognitive, and speech activities intensively develop. During this period, children's ability to perceive the environment and express their thoughts clearly and coherently is shaped by pedagogical and psychological influences. Speech is the form of expressing cognitive activity, while thinking constitutes the content of cognitive processes. The teacher's purposeful actions, an active learning environment, and appropriately chosen methods are essential for fostering this development.

Digital technologies—interactive boards, learning platforms, audiovisual resources, and e-textbooks—have transformed how children learn. These tools enable children to acquire new words through listening, repetition, and visual observation more efficiently. Digital environments enhance communication skills, enrich speech content, and expand vocabulary. Proper guidance by teachers further stimulates attention and memory development.

Game-based learning is one of the most effective means for developing thinking in primary students. During games, students think, make decisions, solve problems, and draw conclusions, which fosters logical, analytical, and creative thinking. Interactive tasks, digital games, open-question techniques, virtual experiments, and visual models increase students' engagement and activate cognitive processes.

Effective use of digital environments depends on teachers' and parents' digital literacy. Teachers must understand the pedagogical potential of new technologies and integrate them purposefully into lessons. Parents should guide their children's technology use and support their learning activities. Collaboration between teachers and parents enhances students' motivation and ensures the proper use of digital resources.

Theoretical Framework

Experiences in classrooms using digital resources indicate that purposeful integration of digital tools significantly improves students' speech activity and cognitive levels. For example, tasks such as "speaking images," "word maps," and "complete the thought" foster both vocabulary and cognitive flexibility. Modern educational approaches—including STEAM education, project-based learning, multimodal instruction, and communicative methods—further enrich speech and thinking activities.

Digital innovations in education positively influence speech and cognitive development. Using interactive boards, teaching platforms, audio-visual materials, and game-based programs enhances students' interest in learning, expands vocabulary, and develops logical and creative thinking. Digital tools personalize learning, allowing each child's potential to emerge. Systematic and purposeful integration of digital resources is thus essential for speech and cognitive development.

Future research should examine the psychological and social communication impacts of digital technologies in primary education. Teacher training programs should enhance digital pedagogical competencies. Adapting teaching resources to national curricula and creating age-appropriate digital materials are also crucial.

Recommendations:

- Teachers should widely use interactive and game-based methods in lessons;
- Parents should monitor technology interactions and support learning-oriented activities;
- Schools should implement programs on digital literacy and media culture.

Digital tools open new perspectives for developing students' speech. Multimedia resources, interactive platforms, and e-books enrich vocabulary and strengthen oral and written expression. Visual and audio support facilitates comprehension, while digital games and simulations encourage decision-making and evaluation. Examples include:

- Simulation games: students learn to solve ecological and social problems;
- Task-oriented games: enhance logic and strategy skills.

Digital technologies also reshape teachers' methods and approaches. New methods promoting speech and thinking in primary students emphasize interactivity, project-based learning, and digital collaboration.

The STEAM approach motivates students to conduct research and projects using digital lab programs to perform experiments, analyze results, and present findings, developing both speech and cognitive skills. Digital platforms make lessons engaging and measurable. Platforms like Mentimeter, Kahoot, and Quizizz allow teachers to conduct quizzes, surveys, and tests, fostering active participation and critical thinking. Google Classroom, Teams, and similar platforms enable collaboration with teachers and peers. Virtual group projects enhance idea exchange, explanation skills, and speech development.

In the digital era, teachers' role extends beyond knowledge transmission. They must efficiently use digital tools and promote speech and cognitive development. Modern teachers should be digitally literate, creative, and aware of pedagogical technologies. Integrating various digital tools into lessons increases engagement and interactivity. For example, organizing a Kahoot quiz allows students to have fun while mastering lesson content.

Digital technologies in primary education enhance vocabulary, oral and written expression, and critical and creative thinking. Multimodal materials, interactive games, project-based tasks, and virtual collaboration increase motivation and engagement. Key approaches include: purposeful use of digital tools, STEAM and project-based learning, flipped classrooms, digital ethics, and teacher digital literacy.

Literature Review

The development of speech and thinking in primary students in the digital era is widely discussed in pedagogical research. Literature shows that integrating digital technologies into learning environments creates new opportunities for organizing language skills and cognitive activities (Prensky, 2001). However, effectiveness largely depends on context and pedagogical approach (Selwyn, 2016).

Research indicates that multimedia and interactive resources enhance motivation (Mayer, 2009). Some studies caution that overuse can distract attention, emphasizing the need for pedagogically appropriate selection (Carr, 2011). Problem-based digital activities strengthen logical and critical thinking (Jonassen, 2010), but methodological gaps exist for primary-level adaptation (Vygotsky, 1978).

Teacher roles are categorized as: technology as a supportive tool (Fullan, 2013) and teachers as facilitators in digital environments (Trust, 2017). However, primary teachers' readiness for this shift remains debated.

Two gaps are evident:

1. Lack of models simultaneously developing speech and thinking in primary students (Mayer, 2009; Jonassen, 2010).
2. Limited methodological frameworks for pedagogically appropriate adaptation of digital tools (Selwyn, 2016; Trust, 2017).

Methodology

A mixed-methods approach was employed, combining quantitative and qualitative data collection and analysis. Quantitative data measured the impact of digital tools on speech and cognitive skills; qualitative data explored teacher experiences and observations.

Participants included 120 3rd and 4th-grade students from three schools in Baku, with 18 students and 6 teachers selected for qualitative analysis. Random and purposive sampling ensured objectivity and experience-based selection. Tools included: speech development tests, cognitive skill diagnostics, teacher interviews, and classroom observation forms.

Data collection spanned four weeks:

1. Week 1: Pre-tests on speech and cognitive skills.
2. Weeks 2–3: Lessons using digital tools, teacher interviews, and classroom observations.
3. Week 4: Post-tests, data compilation, and coding.

Ethical standards were observed; anonymity was ensured. Quantitative data were analyzed using SPSS 26 (descriptive statistics, paired t-tests, ANOVA), and qualitative data via thematic analysis with triangulation.

Findings and Discussion

The digital era offers extensive opportunities to enhance speech and thinking in primary students. Modern methods and digital approaches create interactive, motivated, and effective learning environments. Purposeful application of digital tools serves as a contemporary pedagogical approach supporting speech and cognitive development.

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EVALUATING THE CONTRADICTIONS BETWEEN DISCIPLINARY AND JUDICIAL SANCTIONS IMPOSED ON MIDDLE AND HIGH SCHOOL STUDENTS USING PROHIBITED SUBSTANCES

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ABSTRACT

Research indicates that early initiation into substance use significantly contributes to the development of substance use disorders. This highlights the importance of legal regulations and preventive measures concerning minors who use substances or suffer from substance use disorders. This study aims to evaluate the deterrent effect of disciplinary sanctions imposed on middle and high school students engaged in substance use, while also examining their potential inconsistency with judicial sanctions applied to the same behavior. First, the study discusses why substance use disorder, which is recognized as a brain disease, cannot be effectively prevented through punitive disciplinary or judicial measures. It then emphasizes the inconsistency in Article 31 of the Turkish Criminal Code, which exempts minors from criminal liability due to age and instead mandates security measures, while simultaneously allowing the most severe disciplinary sanction within the education system—school transfer. The study stresses the need to prioritize rehabilitative and supportive approaches over punitive ones, as research shows that disciplinary sanctions are ineffective in addressing substance use disorders among children. Findings also indicate that punishment increases behavioral problems in students. In Turkish law, rather than penalizing substance dependence, judicial measures emphasize supervised freedom and rehabilitation. Accordingly, it is essential that legal principles such as reduced criminal responsibility and the best interests of the child be reflected in disciplinary practices. Teachers and parents should receive in-service training to recognize substance-related behaviors and to guide children toward rehabilitation. Finally, instead of implementing school transfer sanctions under current Ministry of National Education regulations, prioritizing rehabilitation-oriented policies would provide a more effective and child-centered approach.

Keywords: Substance use disorder, child, rehabilitation, guidance, disciplinary sanction, judicial sanction

Introduction

Substance use disorder is defined as a neurological disease characterized by the continuous desire to consume a substance due to its pleasurable effects and the discomfort experienced in its absence, accompanied by certain behavioral disorders (Uzbay & Yüksel, 2003). Research shows that substance use mostly begins during adolescence. Studies indicating that 75% of individuals who start using substances at an early age develop substance use disorders (NIDA, 2014; Turkish Parliamentary Research Commission Report, 2008) point to the importance of preventing substance use starting from childhood.

Lahey (2022) states that 50% of children who first try drugs and alcohol in the 8th grade develop addiction throughout their lives, and that the average age of initiation into drug and alcohol use in the United States is 13, negatively affecting students' development and learning (Lahey & Lahey, 2021). In Türkiye, the prevalence of substance use among children under the age of 18 is also increasing. The 658% increase in substance use rates among children under the age of 11 in 2024 compared to 2009 is particularly striking (EGM, 2024).

A study conducted in 2016 reported that while the proportion of adolescents applying to Bakırköy Mental and Neurological Diseases Hospital for substance use problems was 31.4% in 2011, this rate increased to 68.6% by 2014 (Doksat et al., 2016). Within the scope of the European School Survey Project on Alcohol and Other Drugs (ESPAD), research conducted with high school students in Türkiye and 35 other European countries revealed significant increases in substance use among Turkish students (Mokinaro et al., 2020). According to ESPAD 2024 data, the prevalence of illicit substance use among individuals aged 15–34 is 34.6% in Czechia, 28% in France, 27% in Italy, and 25.6% in the Netherlands (EUDA, Statistical Bulletin 2024). The fact that the average age of individuals presenting to the emergency department of Ankara University Faculty of Medicine due to substance use is 15.3 is alarming. The use of toxicological data in this study further increases its significance.

Research indicating that substance use rates among adolescents have increased over the years in Türkiye, the United States, and some European countries (Heitzeg, Hardee, & Beltz, 2018) necessitates the implementation of urgent measures starting from early childhood. Adolescence is a challenging period in human development. During this period, since the frontal lobe of the brain is not yet fully developed, adolescents may have difficulty complying with rules and may exhibit increased risky behaviors. With the addition of substance use, serious problems may arise in students' neurological structures, certain personality traits, behaviors, and relationships with family members and peers (Önen, Sargın, & Kahraman, 2023).

In a study evaluating 90 research studies conducted on substance addiction in Türkiye, adolescence was identified as the most significant risk factor. This was followed by gender, school dropout, peer environment, family life, substance use within the family, criminal history, place of residence, and experiences of physical and sexual abuse

(Öztürk, Kırlioğlu & Kıracı, 2015). Awareness of all these risk factors is important for the prevention of substance addiction.

The aim of this study is to discuss the deterrent effect of disciplinary sanctions envisaged for students with substance use disorders at the middle and high school levels and to evaluate their contradiction with judicial sanctions prescribed for the same act, while offering alternative suggestions. In this context, the study first discusses why substance use disorder, which is a health problem, cannot be prevented through disciplinary or judicial punishments. It then focuses on the contradiction between the fact that children who should not be criminally punished due to age under Article 31 of the Turkish Criminal Code are nevertheless subjected to the most severe disciplinary penalty “school transfer” at the middle and high school levels. The study aims to contribute to practitioners by identifying alternative solutions instead of punishment in the prevention of substance use disorders.

Punishment of Students with Substance Use Disorders in Schools

It is of great importance to take measures to ensure that children never encounter substances. However, despite all precautions taken, the disciplinary punishment of children who use substances or are addicted to them at school constitutes a serious problem. This is because substance use disorder is accepted as a brain disease (Uzbay & Yüksel, 2003). It is not scientifically possible to prevent a disease through punishment.

In many countries around the world and in Türkiye, adults who use substances are directed toward rehabilitation rather than being subjected to judicial punishment. In contrast, the absence of regulations in the disciplinary system for children that prioritize rehabilitation for the same act represents a significant contradiction. In a study conducted with children and adolescents receiving inpatient treatment, it is highly promising that 63.3% of 90 individuals did not relapse into substance use following treatment.

For these reasons, children and adolescents who use substances or have substance use disorders should be directed toward treatment rather than being punished. Punishing children who are already unwilling to attend school due to substance use disorder may lead to their complete disengagement from school and the worsening of the problem. Moreover, it has been observed that 67% of children aged between 12 and 18 who were receiving treatment for substance addiction at ÇEMATEM (Child and Adolescent Substance Addiction Treatment Center) had received disciplinary sanctions at school; however, these sanctions proved ineffective (Kardaş & Kardaş, 2023).

Legal Regulations Regarding Substance Use Among Middle and High School Students in Türkiye and the Contradiction Between Disciplinary and Judicial Sanctions

According to Article 55-c-16 of the Ministry of National Education Regulation on Preschool and Primary Education Institutions, students in the 6th, 7th, and 8th grades who commit the act of “using alcohol or addictive substances” are to be punished with the most severe sanction, namely “school transfer.” Although Article 56 of the same regulation includes factors such as the student’s age, general condition inside and outside school, academic achievement, and participation in social and cultural activities among the criteria to be considered in determining sanctions, there is no explicit provision stating that children who use substances or have substance use disorders should not be punished.

Similarly, Article 164-2-k of the Ministry of National Education Secondary Education Institutions Regulation stipulates that high school students who “possess or use intoxicating harmful substances” shall be subject to “short-term suspension from school for 1 to 5 days,” meaning that the student is deprived of all educational and extracurricular activities during the penalty period. Furthermore, Article 164-3-i of the same regulation prescribes the sanction of “school transfer” for students who “possess or use addictive harmful substances.” Although an amendment made in 2015 to Article 168-4 of the regulation (Amendment: 1.7.2015–29403 Official Gazette) introduced the provision that “students who engage in behaviors and acts requiring disciplinary action may be subjected to rehabilitative practices based on a report from the school guidance service or guidance and research center and a decision of the school administration,” no provision has been introduced stating that students who use addictive substances should not be punished. In other words, the “school transfer penalty” continues to exist as a sanction for substance use.

Under Article 191 of the Turkish Criminal Code, adults who use stimulant or narcotic substances are subject to imprisonment ranging from two to five years. However, it is stipulated that the initiation of public prosecution may be postponed for a period of five years, during which a probation measure shall be applied for at least one year, and treatment may be imposed if deemed necessary.

Considering that addiction to illicit substances is a brain disease, even adults are not directly punished but are instead subjected to probation and treatment. In contrast, it constitutes a significant contradiction that a child—especially between the ages of 10 and 12—who bears no criminal responsibility due to age is subjected to the most severe disciplinary punishment. Article 31 of the Turkish Criminal Code states: “Children who have not completed the age of 12 at the time of committing the act shall have no criminal responsibility. No criminal prosecution shall be initiated against these individuals; however, security measures specific to children may be applied.” It is further

stated that for children who have completed the age of 12 but not 15, and those between 15 and 18, a reduction in penalty shall be applied provided that they have the ability to perceive the legal meaning and consequences of their act and to direct their behavior accordingly. Although disciplinary and judicial procedures are independent of each other, it is preferable that regulations be made in accordance with the best interests of the child.

It is accepted in Turkish law and in the legal systems of some other countries that children under the age of 12 do not possess the ability to comprehend the legal meaning and consequences of their actions or to control their behavior accordingly. Furthermore, special regulations aimed at protecting and treating children have been introduced concerning the trial and punishment of children driven to crime. One such regulation is the “United Nations Standard Minimum Rules for the Administration of Juvenile Justice (Beijing Rules),” adopted by the United Nations General Assembly in 1985 (Efe, 2008; Artuk, 1992; Aksay, 1990).

In summary, punishing substance use and addiction—recognized as a disease requiring treatment in children—at the middle school level with the “school transfer penalty” is inappropriate for two reasons. First, according to Article 31 of the Turkish Criminal Code, children between the ages of 10 and 12 bear no criminal responsibility. Similarly, for high school students aged between 12 and 18, it is necessary to determine whether they possess the ability to comprehend the legal meaning and consequences of their actions and to direct their behavior accordingly. However, no such provision exists in the Ministry of National Education regulations on Preschool and Primary Education Institutions or Secondary Education Institutions.

The purpose of punishing children is to deter them from committing the act and to prevent the repetition of behavior considered to be an offense. However, transferring a child who uses substances to another school as a form of punishment will not solve the problem; on the contrary, it may negatively affect the child psychologically, damage their self-perception, and lead to labeling and exclusion. In such cases, what should be done is to ensure that the child receives treatment in cooperation with their family in a confidential manner. Necessary referrals for treatment should be made and monitored in collaboration with healthcare institutions. If the child’s parents fail or are unable to fulfill their responsibilities in this regard, health measures can be taken for the child under the Child Protection Law. Additionally, investigating the factors that lead the child to use substances and taking necessary measures accordingly may contribute to resolving the problem.

Research indicates that disciplinary sanctions imposed on children with substance use disorders at the middle and high school levels are not deterrent (Nelsen, Lott, & Glenn, 2000). Moreover, imposing penalties that may negatively affect the child’s entire life, when the priority should be treatment, is not compatible with the requirements of modern education. Numerous studies have also demonstrated the negative effects of punishment on students in general (White, 2023; Suvall, 2009).

Not only substance use but also students who receive disciplinary sanctions for violating other school rules may blame their teachers and school administration, experience deterioration in peer relationships, and even exhibit violent behavior toward their environment due to anger. As a requirement of living within a community and society at large, children should be taught from an early age that rules must be followed and that non-compliance will have consequences. However, such sanctions must not harm children’s personal, psychological, social, and academic development.

Research shows that it is not possible to prevent substance use and substance use disorders in children through the “school transfer penalty.” This is because substance use at an early age may stem from various factors related to family, peer groups, and environment. For example, a study conducted with high school students in Malatya found that “children of parents with democratic attitudes have negative attitudes toward illicit substances, whereas children of parents with authoritarian and overprotective attitudes have more positive attitudes toward such substances” (Aksoy, 2006). First and foremost, the factors that lead the child to use substances must be investigated. As long as these factors persist—and particularly if substance use disorder is not treated—it is very difficult for disciplinary sanctions to have a deterrent effect.

Studies conducted abroad indicate that oppressive and punitive approaches increase behavioral problems among students, leading to rebellion, defiance, resentment, revenge, and feelings of distrust (Skiba & Peterson, 2000; Gordon, 1997). On the other hand, children who feel under the threat of punishment may experience decreased motivation to learn and may even deliberately avoid completing assigned tasks. One of the most significant outcomes is a noticeable decline in academic achievement (Mertoğlu, 2026).

For all these reasons, as in many countries, priority should be given to rehabilitation measures for children at both middle and high school levels who use substances or have developed substance use disorders. This necessitates changes in disciplinary regulations that currently prescribe punishment for students exhibiting substance use disorders in middle and high schools.

Legal Regulations Concerning Middle and High School Students Who Use Substances in Some Countries

In many countries, substance use disorder is recognized as a disease that requires treatment. Legal regulations concerning middle and high school students who use substances vary from country to country and even between states within the same country. For example, in Germany and the United States, these regulations differ by state; the Bavarian Education Law stipulates that the act of using and possessing substances is punishable by expulsion

from school (BayEUG, Art. 86-2-10). In contrast, the Hamburg Education Law states that “educational measures, including assistance provided by the school guidance counselor, school counseling services, or school social support services, should in principle be implemented before disciplinary sanctions” (HmbSG, Art. 49). It further emphasizes that “in cases of persistent educational problems, educational measures—including support from school counseling or social services—should be applied prior to disciplinary sanctions, and disciplinary measures should be combined with educational interventions.”

In the Canadian education system, if a child who uses substances or commits another offense poses an unacceptable risk to the safety of others at school, a temporary suspension may be imposed. However, during this period, necessary support is provided to ensure the student’s rehabilitation. Before imposing any disciplinary measure, the school principal is required to understand the underlying causes of the behavior, provide counseling and mental health support with parental consent, and assist students in identifying alternative behavioral choices through problem-solving approaches. The principal must also help students cope with conflict and learn how to manage their emotions. In particular, before imposing a suspension of 11 to 20 days, it is required to provide a program that includes both academic and non-academic components aimed at promoting positive behavior, such as anger management, substance abuse counseling, or life skills coaching (Government of Ontario).

A notable and consistently emphasized aspect of the Canadian education system is that, in disciplinary decisions concerning middle and high school students who use illicit substances, if the student lacks the ability to control their behavior or understand the possible consequences of their actions, educational measures—both academic and non-academic—should be implemented instead of disciplinary punishment. No such provision exists in the disciplinary regulations governing middle and high school students in Türkiye. In contrast, from a judicial perspective, while children under the age of 12 cannot be punished under any circumstances, for children over the age of 12 it is required to determine whether they possess the ability to control their behavior and foresee the consequences before imposing penalties.

In Sweden, due to concerns that substance use beginning at an early age may mark the onset of substance use disorder, the idea of criminalizing personal use was considered. However, a study conducted in 2017 with 1,847 children aged 15–17 who used narcotic substances found that those who received rehabilitation measures had lower rates of reoffending compared to those who did not receive such measures. The same study recommended early intervention, personalized support, and a multidisciplinary approach to the prevention of substance use (Glad, Berlin, Bäckman, Forkby, & Wallin, 2025).

In the United States, school-based educational programs aimed at developing strong life skills and resilience are implemented in primary, middle, and high schools to prevent substance use. These programs are designed to build upon one another according to grade level and are continuously reinforced. Research shows that children tend to turn to illicit substances as a way of coping with emotions such as loneliness, boredom, depression, fear, anger, insecurity, and lack of affection. Students with strong life skills are able to manage anger, make healthy decisions, demonstrate empathy, set goals, establish satisfying friendships, and protect themselves; therefore, instead of resorting to illicit substances, they are able to solve their problems in a constructive manner. This resilience is achieved through skills taught at an early age and strengthened throughout adolescence. Life skills are critically important for children’s healthy development and their ability to cope with life’s challenges (Prevent+Ed, *3rd Grade Building You, Building Me*, <https://prevented.org/programs/building-you-building-me-program>).

Alternative Methods Beyond Punishment in the Prevention of and Intervention in Substance Addiction

The causes and prevention of substance addiction constitute a highly comprehensive subject. The aim of this study is not to discuss in detail the causes of substance addiction and prevention methods, but rather to present alternative approaches for preventing substance use among children instead of resorting to punishment. This requires a brief review of risk factors. The child’s personality, family structure, socio-economic status, academic failure and school absenteeism, adolescence (Zucker, Heitzeg, & Nigg, 2011), and peer environment are among the most significant risk factors.

Curiosity and peer pressure, feelings of helplessness, lack of self-confidence, feelings of worthlessness, and difficulties in coping with anxiety, as well as conditions such as depression and anxiety, may predispose children to substance use. Weak social relationships, difficulties in impulse control, and certain behavioral disorders may also contribute to substance use. One of the most important factors is the absence or weakness of hope for the future. Another contributing factor is the easy accessibility of illicit substances.

The family plays a crucial role in a child’s substance use. Children who are not raised in an environment of love and trust from the ages of 0–6 are at psychological risk. Substance use and a criminal history among family members are among the factors that increase the risk of substance use. Research shows that substance use and other criminal behaviors increase among children who have lost their parents or live in separated family environments (Aydoğdu & Olcay, 2013). In particular, poorly managed divorce processes may negatively affect children both materially and emotionally.

Parents, school administrators, and teachers have significant responsibilities in preventing substance use among children and in combating addiction. Research indicates that educating children about the dangers of drug use (e.g.,

DARE – Drug Abuse Resistance Education) and early intervention programs such as “The Courage to Speak Foundation” produce highly positive results in preventing addiction (SAE Institute Canada, Alcohol and Drug Prevention Policy <https://canada.sae.edu/alcohol-and-drug-prevention-policy>).

It is important that children who use substances are not excluded, labeled, or pushed into loneliness and helplessness. A distinction must be made between substance use and substance addiction. Schools should have a pre-prepared action plan outlining how to respond to students who use substances. In the implementation of this plan, school administrators, guidance counselors, and teachers play a key role. Teachers and parents should be informed by experts regarding “the symptoms that may be observed in students who use substances, approaches to children who use substances, and the procedures to be followed in cases of substance addiction.”

Within the scope of combating substance addiction in schools, the proper implementation of the “4B” strategy—comprising the stages of “Informing,” “Awareness,” “Coping,” and “Termination”—requires not only guidance counselors and teachers but also the support of psychologists, psychiatrists, social workers, forensic medicine experts, and families (Turkish Green Crescent Society and Ministry of National Education, 2024).

The Role of Parents, Teachers, and Administrators in Preventing Substance Addiction in Children

In the prevention of substance addiction, the awareness of educators, parents, and students regarding the dangers of substance use is of utmost importance. According to the “2024 Türkiye Drug Report” published by the Ministry of Interior – General Directorate of Security, within the scope of the Turkish Green Crescent’s Türkiye Addiction Prevention Education Program, implemented in cooperation with the Ministry of National Education, NGOs, and universities, “awareness training was provided to 14,300,843 students, 451,500 teachers, and 1,605,731 parents during the 2022–2023 period.”

In particular, educational programs designed for students emphasize topics such as “Coping with Negative Emotions,” “Self-Awareness,” “Body Image,” and “Peer Relationships” (Önen & Sargın, 2023). The “Family Guide for Protection from Addiction,” developed within the scope of the Türkiye Addiction Prevention Education Program, should be made accessible to all parents. This guide includes information for parents on the causes and types of addiction, how addiction affects children, parenting skills, children’s developmental stages, and recommendations on how to cope with risks during these stages (Turkish Green Crescent Society, *Family Guide for Protection from Addiction*, 2022).

Rehabilitation in Substance Use Disorder

In rehabilitation, detoxification of the substance from the body is of primary importance. Subsequently, it is a process that involves not only maintaining abstinence through pharmacological or psychosocial interventions but also enabling the individual to return to a functional life. Despite all preventive measures, the treatment of children who develop substance addiction is more challenging. Once addiction develops, the support of parents and educators becomes limited, and children need to be referred to rehabilitation centers.

In Türkiye, there are institutions that provide both inpatient and outpatient treatment services for substance addiction. Within these institutions, and in accordance with the Child Protection Law, children for whom a care or protection order has been issued are admitted to “specialized child homes” to ensure their care, protection, and access to psychological and social support. In ÇEMATEM (Child and Adolescent Alcohol and Substance Addiction Treatment and Education Center) and AMATEM (Alcohol and Substance Addiction Treatment Center), various activities are conducted to engage children. These include sports facilities, animal shelters, hobby areas, and educational and counseling services.

“Drug Treatment Courts,” established to reduce substance use disorders and related crimes, play an important role in both prevention and rehabilitation. This court model conceptualizes drug addiction as a health issue. Due to the effectiveness of these courts, first established in the United States (Yüce, 2015), they have become increasingly widespread in many countries, including Scotland, Canada, England, Ireland, Austria, and Belgium (Şahin, 2024). Studies showing that countries and regions with drug treatment courts experience significant reductions in drug use, drug-related deaths, and crime rates compared to those without such courts are promising (Calus, 2023).

Conclusion And Recommendations

The current system of the Ministry of National Education requires that children who use substances or have substance use disorders in middle and high schools be subjected to the disciplinary sanction of “school transfer.” However, substance use disorder is recognized by experts in the field as a brain disease. It is not possible to prevent a disease through punishment. Moreover, research indicates that disciplinary sanctions are not effective in preventing substance use disorders; on the contrary, they may contribute to various problem behaviors.

Since substance use disorder is both a medical condition and children have limited capacity to understand the meaning and consequences of their actions due to their developmental stage, they should not be subjected to punitive measures, either judicially or disciplinarily. For these reasons, in accordance with Article 55-c-16 of the Ministry of National Education Regulation on Preschool and Primary Education Institutions and Article 164-2-k of the Ministry of National Education Secondary Education Institutions Regulation, it is necessary— in order to

protect the child's health and best interests— to abolish the “school transfer penalty” for children who use substances and instead introduce regulations that direct them toward rehabilitation.

Of course, age-appropriate measures should be applied for students who do not comply with school rules. However, it is not appropriate to impose the “school transfer” sanction on middle and high school students who use substances or have substance use disorders for the reasons explained above. Nevertheless, in cases where access to substances within the school environment is easy or where peers who use substances are present, a school transfer may be implemented with parental consent, provided that it is not considered a disciplinary punishment.

For children who use substances or have substance use disorders, many measures can be implemented through cooperation among schools, families, healthcare institutions, law enforcement, and judicial authorities. Rehabilitation-based interventions can be incorporated. Research has shown that such measures are significantly more effective than punitive approaches. The reasons why a child uses substances, how access is obtained, and the familial, environmental, and individual factors involved must be carefully investigated, and appropriate preventive measures must be implemented.

Curiosity and peer pressure, feelings of helplessness, lack of self-confidence, feelings of worthlessness, difficulties in coping with anxiety, as well as depression and anxiety, may predispose children to substance use. Weak social relationships, difficulties in impulse control, certain behavioral disorders, and lack of hope for the future may also contribute to substance use.

The way teachers and parents communicate with children who use substances or have substance use disorders is critically important. In-service training may be provided to teachers and parents on creating a healthy home and school environment and on appropriate approaches to children. Having a pre-prepared action plan in schools regarding how to respond to students who use substances may provide significant practical support to teachers and administrators.

Furthermore, as in some countries, establishing specialized drug treatment courts for children who use substances would enhance the effectiveness of these courts in relation to minors. Ensuring treatment and close monitoring of substance users—particularly those with addiction—through a multidisciplinary and therapeutic approach, rather than traditional punitive methods, may also serve as a viable solution for our country.

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EVALUATION OF CLASSROOM TEACHERS' VIEWS ON CHANGES TO TEXTBOOKS

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ABSTRACT

Textbooks are one of the indispensable tools of education today. Change and renewal are also essential in our era. In the information society, to keep up with the times and not fall behind, textbooks must constantly change and develop. Textbooks must also be changed and renewed in this period.

This research sought the opinions of teachers regarding the change in textbooks. 24 volunteer teachers working in Northern Cyprus in 2024-2025 participated in the research. The research was conducted using a semi-structured interview method, one of the qualitative research methods. In addition to their personal information, teachers were asked 3 open-ended questions.

This research found that textbooks need to be renewed due to curriculum changes, that textbooks should be changed every five years and that teachers want to change textbooks due to exercises and activities.

Keywords: Textbook changes, teacher

Change is innovation. The concept of change and transformation encompasses the totality of alterations within a time period and a transition to another form. At the most general level, change is a temporal phenomenon; it is the state of something appearing in a different condition (Ford and Ford, 1995). Today, because technology is developing so rapidly, change is inevitable. Societies that fail to keep up with change stagnate and cannot develop. Keeping up with the times, adapting to the era, is a necessity of change. There are many internal and external factors affecting the field of education. These interact with each other and ultimately shape the field. Therefore, when addressing the problems of the education system, it is necessary to have a close understanding of the effects of these factors on the system. On the other hand, it should also be noted that most problem areas in education show continuity from the past to the present (Baloğlu, 1990). Textbooks should also be revised and continuously updated to suit our times. Although teaching technologies and teaching materials have diversified and improved greatly in our era, textbooks remain indispensable. Textbooks have long been one of the fundamental tools used to ensure success in education (Seguin, 1989). Textbooks are 'critical' tools for both learners and teachers in terms of the curriculum's target behaviors, content, teaching situations, participation in learning, measurement, and evaluation dimensions (Kılıç and Seven, 2002). In a sense, a textbook is a fundamental resource approved by a specific institution and parallel to the curriculum for teaching a subject at a certain level (Gülersoy, 2013).

The aims and functions of textbooks can be listed as: structuring and developing learning, guiding learning, contributing to self-learning, and assisting in measurement and evaluation. Indeed, when examining the content of textbooks, they generally provide general information on the subject through aims and introductions. Accordingly, they develop the unit and structure learning. Finally, they organize information, guide learning, and include measurement and evaluation activities. In summary, the functions of textbooks are to present information in an organized manner, facilitate self-learning, coordinate learning, and contribute to measurement and evaluation (Ceyhan and Yiğit, 2004).

Textbooks must be prepared with high quality in terms of purpose, function, and content, and written meticulously according to specific criteria. The process of preparing, producing, and distributing textbooks is complex, long-term, and requires significant financial investment. The textbook preparation process necessitates effective academics, education experts, and publishing managers, along with functional planning and organization (Seguin, 1989). Furthermore, textbooks must meet specific criteria in terms of content and format. The following points should be considered when preparing an ideal textbook: Firstly, a comprehensive bibliography and content review,

obtaining opinions from relevant institutions, and having textbooks prepared by experts are essential (Gülersoy, 2013). Secondly, evaluation based on variables such as language used, suitability for student level, format, attractiveness, contribution to meaningful learning, and ease of use in teaching is also necessary (Küçükahmet, 2016).

Textbooks can be examined from various perspectives. Generally, books are analyzed in terms of form, scope and content, teaching principles, techniques, methods, and strategies. In addition, the presence of preparation and assessment questions is also considered (Duman, Karakaya, Çakmak, Eray, and Özkan, 2001). Accordingly, it is generally accepted that textbooks are examined in terms of physical characteristics, educational-visual design, and language and expression dimensions. The physical characteristics of a textbook include appearance, color, information that should be included in the textbook, size, and font size. Educational design in a textbook consists of learning outcomes (objectives), content, teaching-learning process, and measurement and evaluation dimensions. In textbook visual design, visual appeal and suitability for the target audience are prioritized. In textbook language and expression, suitability to the target audience level and adherence to writing rules are essential (Küçükahmet, 2011).

When considering textbooks in general, the theoretically clear but practically problematic question is what qualities they should possess. In both domestic and international literature, the general principles for textbooks are based on physical characteristics, meeting the requirements of the curriculum, content organization, and suitability to teaching principles, techniques, and methods. Furthermore, textbooks, as the most critical support for curriculum development through analysis, strategy, and evaluation, should exhibit parallelism and integrity in terms of aims, content, process, and evaluation elements (Smith and Ragan, 2005; Posner and Rudnitsky, 2006). Generally speaking, the qualities a high-quality textbook should have can be listed as follows: meeting the objectives of the course, content-aim alignment, visual aids, inclusion of various educational structures supporting course information such as puzzles, anecdotes, visuals, reading passages about popular figures, and examples of experiments and observations, etc. (Kaptan, 1999; Hayta et al., 2003; Çoruh and Erarslan, 2017). Some conclusions can also be drawn from research on expectations from textbooks and what constitutes a quality textbook (Jones, 2009). He states that the evaluation of textbooks depends on multifaceted variables and that qualities such as language, appropriateness to the level, the level of the student and teacher, and the development of different skills are sought in the textbooks.

Research Objective and Sub-Objectives

The main objective of this research is to determine teachers' opinions about changes in textbooks. To achieve this objective, the following questions were addressed:

- 1- What is the reason behind the changes to the textbooks?
- 2- What are teachers' opinions on how often textbooks should be changed?
- 3- What changes do teachers want to see made to textbooks?

Method

The subjects of this study consisted of teachers working in the Turkish Republic of Northern Cyprus during the 2024-2025 academic year. Schools and teachers were selected through random sampling. Information about the teachers participating in this study is presented in Table 1.

Table 1: Demographic characteristics of participating teachers.

Personal Information	Features	f	%
gender	Woman	13	%54
	Man	11	%46
His/Her Role at School	Class Teacher	12	%50
	Subject Teacher	8	%33
	Preschool Teacher	4	%17
Educational Status	Doctorate	1	%4
	Degree	5	%21
	University	18	%75
Age Distributions	21 – 30 age	5	%21
	31 – 40 age	10	%42
	41 – 50 age	7	%29
	51 – 60 age	2	%8
Service Period	1 – 5 year	5	%21
	6 – 10 year	4	%17
	11 – 15 year	5	%21
	16 – 20 year	6	%24
	21 – 25 year	4	%17

Table 1 shows that among the participating teachers, 13 (54%) are female and 11 (46%) are male. Regarding their roles at school, 12 (50%) are classroom teachers, 8 (33%) are subject teachers, and 4 (17%) are preschool teachers. Educational backgrounds show that 1 (4%) holds a doctorate, 5 (21%) a master's degree, and 18 (75%) a university degree. Regarding age, 5 (21%) are aged 21-30, 10 (42%) are aged 31-40, 7 (29%) are aged 41-50, and 2 (8%) are aged 51-60. Looking at years of service (seniority), it is seen that 5 people (21%) have 1-5 years of service, 4 people (17%) have 6-10 years of service, 5 people (21%) have 11-15 years of service, and 6 people (24%) have 16-20 years of service.

Research Design

This research employed a qualitative research method to gather teachers' opinions on changes to textbooks. In-depth interviews are one of the most frequently used techniques in qualitative research. Generally, information is obtained through in-depth examination using open-ended questions (Tekin, 2006).

Data Collection Tool

The measurement tool used in the research was prepared with open-ended questions after obtaining expert opinions. Then, sample interviews were conducted with three individuals to determine how clear and understandable the questions were. Finally, the questions were revised with further expert assistance. This ensured the validity and reliability of the research. In this context, "Open-ended questions" and a "Personal Information Collection Form" were developed and prepared for use in the research.

Data Collection

To determine teachers' opinions on the changes to textbooks, volunteer participants in the study group answered questions prepared by the researcher face-to-face and with audio recordings. The audio recordings and notes were later reviewed to create themes. Then, to identify any errors in these themes, an expert also created and compared them. Common themes were selected, and agreement was reached on those that did not share the same views, resulting in a finalized set of themes. This ensured the high validity and reliability of the research.

Data Analysis

The findings obtained in the prepared article were first divided into codes and categories. Themes were revealed through these codes. Interview questions prepared to evaluate the reasons for the changes in textbooks based on teachers' opinions will be derived by finding common points in the codes.

The article presents the opinions of teachers working in state primary schools in the TRNC, creating three dimensions in the research. To protect the anonymity of the volunteer participants, their opinions were coded and footnotes were used. The participants' responses are shown in quotation marks in the article. Additionally, each participant was given a code such as K1, K2, K3... An example of the coding is as follows:

Example:

K: Participant Teacher

"....." (K.1)

Findings

Dimension 1: Findings regarding teachers' views on the reasons for the changes made to textbooks.

The first dimension of the research was designed to reveal teachers' opinions on the reasons for the textbook changes. In this context, 24 teachers were asked about their views on the purpose of the textbook changes. The answers to these questions were coded to extract the themes related to the reasons for the changes, and the distributions of these themes are given in Table 2.

Table 2: Themes related to teachers' opinions on the reasons for textbook changes and descriptive statistics on the distribution of these themes.

Themes	f	%
Curriculum change	10	%36
Renewal	6	%21
Subject reduction	5	%18
Localization	4	%14
Profit generation	3	%11
Total	28	%100

* Some participants expressed more than one theme. Therefore, the total frequency was calculated as 28 (Teacher n=24).

As shown in Table 2, most of the participating teachers ($f=10$, $\%=36$) stated that the main reason for the changes in textbooks stemmed from the changes made in the curriculum. In this context, the responses of some of the teachers who supported this view are as follows;

Textbooks have been changed many times. This was done because they were not in line with the curriculum. (K, 17)

It changed because they are constantly changing the curriculum. When the curriculum changes, there has to be a suitable book. (K, 8)

Yes, it changed. The reason for the change is that the book did not meet the needs, was not suitable for the curriculum, and provided profit to another company. (K, 10)

Dimension II: Findings regarding teachers' opinions on how often textbooks should be changed.

The second dimension of the research was designed to reveal teachers' opinions on how frequently textbooks should be changed. In this context, 24 teachers were asked about their opinions on how often textbooks should be changed. The answers to these questions were coded to extract the themes of the reasons for the changes, and the distributions related to these themes are given in Table 3.

Table 3: Themes related to teachers' opinions on how often textbooks should be changed, and descriptive statistics on the distribution of these themes.

Themes	f	%
Every 5 years	8	%32
Every 2-3 years	4	%16
Should change every year	4	%16
Should change if needed	4	%16
Should change every 10 years	3	%12
Should not change	2	%8
Total	25	%100

* Some participants expressed more than one theme. Therefore, the total frequency was calculated as 25 (Teacher $n=24$).

As shown in Table 3, most participating teachers ($f=8$, $\%=32$) answered the question about how often textbooks should be changed by saying they should be changed every 5 years. In this context, the answers given by a few of the teachers who supported this view are as follows;

Textbooks should be updated every 5 years (K, 1).

Textbooks should be updated every 5 years, taking into account the changes in developing technology and changing environmental conditions (K, 23).

A minimum of 5 years should be waited before making changes, and the textbooks should be updated accordingly (K, 17).

III. Dimension: Findings regarding teachers' opinions on what changes should be made to textbooks.

The third dimension of the research was designed to reveal teachers' opinions on what changes should be made to textbooks. In this context, 24 teachers were asked about their opinions on the necessary changes to textbooks. The answers to these questions were coded, and the themes related to the reasons for change were extracted. The distributions related to these themes are given in Table 4.

Table 4: Themes related to teachers' opinions on what changes should be made to textbooks, and descriptive statistics on the distribution of these themes.

Themes	f	%
Exercises and activities	12	%39
Reducing page count and topics	8	%26
Up-to-date information	4	%13
Localization	4	%13
Attractive design and visualization	2	%6
Information that doesn't rely on rote memorization	1	%3
Total	31	%100

* Some participants expressed more than one theme. Therefore, the total frequency was calculated as 31 (Teacher $n=24$).

As shown in Table 4, half of the participating teachers ($f=12$, $\%=39$) expressed the opinion that changes should be made to the exercises and activities in the textbooks. In this context, the responses of some of the teachers who supported this view are as follows;

There should be activities and exercises that will make children more aware of the world and that will not rely on rote memorization in the curriculum (K, 13).

There should be activities and exercises that are compatible with technology and the age (K,8).

I would like the exercises and activities inside to be more attractive for children and to have questions that are easier for them to understand when they read them. Some of the activities in the books are very boring for children (K, 7).

Discussion And Conclusion

I. Dimension: When participating teachers were asked about the reasons for the changes in the textbooks, many reasons were put forward. The most prominent teacher opinion was that the main reason for the changes in the textbooks was the change in the curriculum. It is thought that the main reason for the teachers reaching this conclusion is that the education programs were renewed before the last change in the textbooks, and then the textbooks were also changed in line with the programs. Bayram and Çimen's (2019) research also emphasized that the textbooks were changed after the curriculum change in order to adapt to the curriculum. Kaya and Perihan (2017) also mentioned in their research that the education curriculum and the textbooks used should change simultaneously. These studies also support the findings obtained in this research.

II. Dimension: The second dimension of the research determined teachers' opinions on how often textbooks should be changed. In this context, the vast majority of teachers concluded that textbooks should be changed every 5 years. This may be because strategic planning should be done for at least 5 years. Since decisions in education show results at the earliest in 5 years, teachers may have given this answer. According to Zuckerman (2000), the vision should be at least five years long. Coşkun and Yıldırım (2018) also support the findings obtained in this research by stating that strategic planning should be at least five years long.

III. Dimension: In the third dimension of the research, participants mostly stated that textbooks contained activities that did not attract children's interest, and it was concluded that the books should contain exercises and activities that would attract children's attention. The reason teachers defend this may be because the activities are mostly monotonous and children constantly do the same activities and exercises. Furthermore, Değirmenci (2013) also emphasized the need for engaging activities in textbooks in her research.

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EVIDENCE-BASED INSTRUCTIONAL APPROACHES FOR ENHANCING STUDENT LEARNING AND TEACHER EFFECTIVENESS

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ABSTRACT

Evidence-based instructional approaches have become increasingly central in contemporary educational research as systems seek reliable strategies proven to enhance student learning and optimize teacher performance. Rather than relying on intuition or traditional practice, evidence-based pedagogy prioritizes methods supported by empirical research across cognitive science, educational psychology, and large-scale experimental studies. This article examines the conceptual foundations, empirical support, and practical applications of evidence-based instructional models. Emphasis is placed on explicit instruction, formative assessment, metacognitive development, collaborative learning, cognitive load theory, and sustained professional development. A methodological overview of how evidence is produced within this research domain is also presented. The findings highlight the importance of data-informed, structured, and cognitively aligned instruction for improving academic outcomes and promoting educational equity. The article concludes by discussing implications for classroom implementation, policy development, and future research directions.

Keywords: evidence-based instruction, instructional effectiveness, cognitive load, formative feedback, metacognition, collaborative learning, teacher development, learning outcomes.

Introduction

Education in the twenty-first century faces unprecedented challenges, driven by rapidly evolving knowledge economies, increasing student diversity, and heightened societal expectations for equitable learning outcomes. In this context, the quality of classroom instruction has emerged as one of the most critical determinants of student achievement. Research consistently demonstrates that teacher effectiveness exerts a far greater influence on learning outcomes than factors such as school funding, class size, or socio-economic status (Hattie, 2009). Consequently, educators, policymakers, and researchers have increasingly emphasized the need for instructional strategies grounded in empirical evidence rather than intuition, tradition, or anecdotal experience.

Evidence-based instruction refers to teaching approaches that are systematically validated through rigorous research, including experimental studies, longitudinal investigations, and meta-analyses. These approaches are designed to enhance learning by aligning pedagogical methods with principles derived from cognitive science, educational psychology, and developmental research. Over the past several decades, evidence-based practices have gained prominence in global education systems as a means to improve student outcomes, promote equity, and support effective professional teaching.

The rise of evidence-based instruction reflects a broader paradigm shift in educational research and policy. Historically, teaching decisions were often informed by personal experience, conventional wisdom, or trial-and-error practices. While such methods have value, they are insufficient for addressing the complex learning needs of diverse student populations and the growing demands of modern curricula. Integrating research findings into classroom practice allows teachers to make informed decisions about instructional design, lesson sequencing, formative assessment, and feedback, ultimately increasing the likelihood of student success.

Moreover, evidence-based instructional strategies are linked not only to improved academic achievement but also to enhanced engagement, motivation, and metacognitive development. Structured approaches such as explicit instruction, formative assessment, collaborative learning, and technology-enhanced teaching provide scaffolds that help students process complex information, regulate their own learning, and apply knowledge across different contexts. These strategies are particularly effective for learners with limited prior knowledge, those facing socio-economic or language-based challenges, and students with special educational needs, highlighting their potential to reduce achievement gaps and foster equitable learning environments.

The integration of evidence-based instruction also has profound implications for teacher professional development. Teachers who implement empirically supported strategies benefit from greater instructional confidence, reflective practice, and the ability to adapt teaching to student needs. Simultaneously, professional development programs designed around evidence-based principles help create sustainable improvements in classroom practice and educational policy.

In light of these developments, the present study aims to provide a comprehensive synthesis of research on evidence-based instructional approaches. By examining multiple pedagogical strategies and their impact on both student outcomes and teacher effectiveness, this study seeks to offer a coherent framework for educational practice that is grounded in robust empirical evidence. It addresses the pressing need to bridge the gap between research

and practice, thereby promoting more effective, equitable, and academically rich learning environments in contemporary classrooms.

Aim

The central aim of this research is to offer an in-depth and analytically grounded investigation of evidence-based instructional practices, with a focus on how these methods enhance student academic performance and strengthen teacher effectiveness. The study intends to bring together current scientific findings, theoretical insights, and practical examples to explain how evidence-driven strategies can be purposefully embedded into everyday teaching environments. Through this approach, the research aims to narrow the persistent divide between scholarly research and classroom application.

More precisely, this study aims to outline the fundamental characteristics of evidence-based instruction, examine how these features shape various aspects of learning and teaching, and explore the ways educators can adapt such approaches to accommodate diverse learner profiles. It also seeks to determine how evidence-supported strategies contribute to teachers' professional development, including improved planning, reflective decision-making, data-guided instruction, and overall pedagogical competence.

Another key aim is to identify the contextual and institutional factors that influence the successful adoption of evidence-based methods, such as administrative support, teacher preparation, access to accurate data, and the integration of digital tools. The study investigates how these supportive elements enable long-term and sustainable implementation across multiple educational settings.

Ultimately, this research aims to provide a clear and robust academic foundation that can guide stakeholders—including teachers, policymakers, curriculum specialists, and researchers—in understanding, applying, and evaluating evidence-based instructional approaches. By combining theoretical discussion with practical implications, the study aspires to promote continuous improvement in educational quality and contribute to more effective and equitable learning environments.

Significance

The significance of this study stems from its contribution to the expanding field of research that highlights the powerful impact of evidence-based instructional methods in modern education. As educational expectations increase worldwide and classrooms become more diverse, the reliance on teaching techniques supported by empirical research—rather than on intuition, routine habits, or isolated trial-and-error—has become increasingly necessary. Evidence-based instruction offers a systematic and organized framework for improving teaching effectiveness by drawing on research from cognitive science, educational psychology, and data-driven learning analytics.

This study is particularly valuable because it addresses the ongoing disconnect between theoretical knowledge and practical application in educational settings. Although many teachers are familiar with principles of effective instruction, these principles are not always applied consistently in classroom practice. By reviewing existing empirical research and emphasizing real-world instructional applications, this study helps strengthen the link between academic evidence and actual teaching methods. This stronger connection enables educators to make more informed choices regarding instructional strategies, assessment techniques, and learner support processes.

The significance of this work also emerges in relation to student outcomes. Extensive research demonstrates that evidence-based practices lead to higher academic achievement, improved engagement, and better long-term knowledge retention. Moreover, these practices promote equity by offering adaptable strategies suitable for diverse student populations, including multilingual learners, students with special educational needs, and those from varying socio-economic backgrounds. Thus, the study aligns with broader educational priorities that emphasize inclusivity, fairness, and equal access to high-quality instruction.

The study also holds importance for the advancement of the teaching profession. Teachers today face increased demands for accountability and measurable improvements in student learning. By presenting a framework rooted in reliable research, this study empowers educators with tools to justify their instructional decisions, enhance classroom performance, and participate in ongoing professional development. Consequently, the study not only supports student progress but also strengthens teacher autonomy, confidence, and professional identity.

Lastly, the study is significant for educational policymakers and curriculum developers. Evidence-based instructional approaches offer a reliable foundation for designing national standards, developing teacher preparation programs, and guiding future educational reforms. Through its comprehensive exploration of validated pedagogical strategies, this research contributes to policy decisions that prioritize data-informed planning and systematic improvement at institutional and governmental levels.

Theoretical Framework

The theoretical foundation of this study is grounded in several complementary frameworks from educational psychology, cognitive science, and instructional theory, which collectively explain why evidence-based instructional strategies are effective in enhancing both student learning and teacher performance. By situating the

study within these theoretical perspectives, the research provides a systematic rationale for the selection, implementation, and evaluation of empirically supported teaching practices.

1. Cognitive Load Theory

A central pillar of the theoretical framework is Cognitive Load Theory (CLT), proposed by Sweller (1988). CLT posits that working memory has a limited capacity for processing novel information, and instructional designs that exceed this capacity can impede learning. Evidence-based strategies such as explicit instruction, guided practice, and structured lesson sequencing are consistent with CLT principles, as they reduce extraneous cognitive load and facilitate the effective assimilation of new knowledge. By breaking complex tasks into manageable steps and providing scaffolds, educators help learners focus on essential content without overwhelming their cognitive resources. CLT is particularly relevant for novice learners, students encountering complex subject matter, and contexts requiring mastery of problem-solving skills.

2. Constructivist and Social Learning Theories

While evidence-based instruction emphasizes structured and explicit methods, the framework also incorporates constructivist principles and social learning theories. Vygotsky's (1978) concept of the Zone of Proximal Development (ZPD) underscores the importance of providing instructional support that is responsive to learners' current abilities while gradually promoting independence. Collaborative learning strategies, such as peer tutoring and cooperative group work, are grounded in social constructivism, which views learning as a socially mediated process. Research by Johnson and Johnson (2009) and Slavin (2014) demonstrates that well-structured cooperative activities enhance knowledge construction, communication skills, and motivation, providing both cognitive and socio-emotional benefits.

3. Metacognition and Self-Regulated Learning

The framework also draws on metacognitive theory, which emphasizes learners' capacity to plan, monitor, and evaluate their own learning (Zimmerman, 2002). Self-regulated learners are better able to set goals, select appropriate strategies, and reflect on outcomes, leading to improved comprehension, retention, and transfer of knowledge. Instruction that explicitly teaches metacognitive strategies—such as summarizing, predicting, and self-monitoring—enables students to internalize learning processes and apply them across contexts. This theoretical lens also informs teacher practices, as educators can guide students to become more autonomous, strategic, and reflective learners.

4. Formative Assessment and Feedback Theories

The importance of formative assessment and feedback mechanisms is supported by Sadler's (1989) and Hattie and Timperley's (2007) theoretical models. These models posit that learning is maximized when students receive clear, timely, and actionable information about the gap between current and desired performance. Feedback that targets cognitive processes and actionable strategies fosters self-regulation, deepens understanding, and enhances motivation. These principles provide the foundation for integrating frequent assessments, immediate corrective feedback, and personalized instructional adjustments into classroom practice.

5. Professional Development and Adult Learning Theories

Teacher professional development is grounded in adult learning theory, particularly the principles of experiential learning and reflective practice (Kolb, 1984). Effective professional development aligns with evidence-based instructional strategies by providing teachers with opportunities to engage in hands-on practice, collaborative reflection, and data-driven decision-making. Long-term, sustained professional learning promotes confidence, instructional expertise, and the ability to implement research-supported strategies effectively across diverse classroom settings.

6. Integration of Technology and Learning Sciences

Finally, the framework incorporates principles from the learning sciences regarding the use of educational technology. Technology is most effective when it is designed to support evidence-based instructional goals, such as adaptive practice, immediate feedback, and collaborative engagement (Pane et al., 2015; OECD, 2020). The theoretical perspective emphasizes that technology is not a substitute for instruction but a tool that can enhance cognitive processing and learner engagement when aligned with sound pedagogical principles.

Synthesis

Together, these theoretical perspectives provide a cohesive rationale for evidence-based instruction. They highlight how structured guidance, formative feedback, collaborative engagement, metacognitive support, professional development, and technology integration interact to optimize learning outcomes. By grounding instructional

strategies in established theory, educators can implement practices that are not only empirically validated but also pedagogically coherent and adaptable to diverse classroom contexts.

Literature Review

The field of evidence-based instructional research has grown substantially over the past five decades, providing educators with a wealth of empirically supported strategies to improve student learning and teacher effectiveness. This literature review synthesizes the most influential findings, drawing from experimental research, meta-analyses, longitudinal studies, and international assessments. It emphasizes the role of explicit instruction, formative assessment, feedback, collaborative learning, metacognition, cognitive load-aligned teaching, professional development, data-driven instruction, and technology-enhanced learning.

1. Explicit Instruction

Explicit instruction has been consistently identified as one of the most effective approaches for enhancing academic achievement. Rosenshine (2012) highlighted principles such as structured lesson sequencing, clear explanations, modeling, guided practice, and immediate corrective feedback. These practices are aligned with cognitive science research and have been demonstrated to improve comprehension, retention, and problem-solving skills. Evidence from Project Follow Through (Bereiter & Engelmann, 1966–1977), the largest educational study in the United States, confirmed that explicit instruction produced significantly higher gains in reading, mathematics, and general cognitive skills compared to less structured or inquiry-based methods. Subsequent meta-analyses support these findings, indicating consistent positive effects across grade levels, subjects, and diverse student populations (Archer & Hughes, 2011).

2. Formative Assessment and Feedback

The importance of formative assessment in enhancing learning has been widely documented. Black and Wiliam (1998) reviewed over 250 studies and concluded that assessment practices that include frequent checks for understanding, real-time feedback, and instructional adjustments can accelerate learning by up to six additional months per year. Feedback that is specific, actionable, and focused on process or self-regulation, rather than general praise, produces the greatest impact (Hattie & Timperley, 2007; Shute, 2008). Formative assessment strategies, including questioning, peer discussions, exit tickets, and self-assessment, enable teachers to identify learning gaps and implement timely interventions, supporting individualized instruction and student autonomy.

3. Collaborative Learning

Collaborative and cooperative learning approaches are strongly supported by research as a means to enhance both academic and socio-emotional outcomes. Johnson and Johnson (2009) report that structured cooperative learning improves reasoning, communication, and persistence, while Slavin (2014) demonstrates that methods like Jigsaw, Student Teams Achievement Divisions (STAD), and peer tutoring yield superior academic results when implemented with clear goals, individual accountability, and positive interdependence. Hattie (2009) found that well-organized collaborative learning consistently produced effect sizes above average instructional gains, reinforcing its efficacy across diverse classroom contexts.

4. Metacognition and Self-Regulated Learning

Metacognitive and self-regulated learning strategies have been shown to significantly improve comprehension, retention, and transfer of knowledge. Zimmerman (2002) highlights that learners who plan, monitor, and evaluate their learning are better able to achieve academic goals. Pressley and Afflerbach (1995) demonstrated that explicitly teaching strategies such as summarizing, predicting, questioning, and self-monitoring enhances students' ability to process and apply information. Evidence from the Education Endowment Foundation (EEF, 2018) indicates that metacognitive instruction can result in learning gains equivalent to seven additional months in a single academic year, particularly for students with low prior knowledge.

5. Cognitive Load Theory and Instructional Design

Cognitive Load Theory (Sweller, 1988) provides a theoretical basis for structuring instruction to optimize working memory use. Empirical studies by Paas, Van Merriënboer, and Sweller (2003) indicate that instructional designs minimizing extraneous cognitive load, through techniques such as worked examples and guided practice, improve learner performance, especially in complex domains like mathematics, science, and language learning. Research demonstrates that novice learners benefit most from structured scaffolds, while experienced learners can handle more autonomous tasks.

6. Technology-Enhanced Instruction

Digital and technology-assisted learning has shown mixed results, largely depending on pedagogical integration. RAND Corporation studies (Pane et al., 2015) demonstrate that personalized adaptive learning systems improve mathematics achievement when embedded in structured classroom routines. OECD (2020) emphasizes that technology alone does not guarantee better learning; rather, it is the pedagogical alignment—supporting feedback, practice, and collaboration—that drives success. Unstructured or excessive use of technology can, in contrast, distract learners and reduce instructional effectiveness.

7. Teacher Professional Development

Sustained, content-specific, and collaborative professional development is critical for ensuring teachers can implement evidence-based strategies effectively. Darling-Hammond et al. (2017) reviewed 35 high-quality studies and found that such programs resulted in significant gains in student outcomes, averaging approximately 21 percentile points. Effective professional development includes ongoing mentoring, coaching, and reflective practice, fostering teacher confidence, instructional skill, and capacity for data-informed decision-making.

8. Data-Driven Instruction

The systematic use of student data to guide instruction is widely recognized as an evidence-based practice. Studies by Wayman and Jimerson (2014) and Hamilton et al. (2009) indicate that structured analysis of assessment results helps teachers identify misconceptions, target interventions, and personalize learning. This approach includes classroom assessments, work samples, observational data, and student self-reports, ensuring that instructional strategies are responsive to actual learner needs.

9. Equity and Inclusivity

A recurring theme across studies is the capacity of evidence-based instruction to reduce achievement gaps and promote equitable learning. NICHD research shows that structured reading instruction, systematic phonics, and explicit mathematics teaching disproportionately benefit students from low-income backgrounds or with learning difficulties. This highlights that research-informed teaching strategies are not only effective for academic achievement but also for fostering fairness and inclusion in increasingly diverse classrooms.

Synthesis

The reviewed literature demonstrates a clear consensus: combining explicit instruction, formative assessment, collaborative learning, metacognitive strategies, cognitive load management, technology integration, professional development, and data-driven decision-making forms a coherent, research-backed framework for maximizing student outcomes and teacher effectiveness. These strategies are generalizable across subjects, grade levels, and cultural contexts, making them universally applicable in contemporary educational settings.

Methodology

Research Design

This study employs a qualitative meta-synthesis approach, combining findings from multiple empirical studies, meta-analyses, longitudinal research, and international assessments. The aim is to provide a comprehensive synthesis of evidence-based instructional strategies and their effects on student learning and teacher effectiveness. This approach allows for the integration of diverse methodologies while maintaining a focus on rigorously validated findings.

The research design follows a multi-phase structure, which includes:

1. Identification of evidence-based instructional strategies: Reviewing established frameworks such as explicit instruction, formative assessment, feedback mechanisms, collaborative learning, metacognitive strategies, cognitive load-aligned teaching, technology-enhanced learning, and professional development.
2. Evaluation of effectiveness: Synthesizing quantitative and qualitative data on student outcomes, including achievement, engagement, retention, and cognitive skill development.
3. Contextual analysis: Examining environmental, cultural, and institutional factors that influence the successful implementation of instructional strategies.

Data Sources

The study draws from a wide range of high-quality, peer-reviewed research and official reports to ensure reliability and comprehensiveness. Data sources include:

Peer-reviewed journal articles published between 1980 and 2025.

Longitudinal studies such as Project Follow Through (Bereiter & Engelmann, 1966–1977).

Meta-analyses synthesizing outcomes of evidence-based strategies, including Hattie's (2009) synthesis of over 800 meta-analyses.

International assessments and reports, including PISA, TIMSS, OECD Digital Education Outlook (2020), and RAND Corporation studies (Pane et al., 2015).

Policy and practice-oriented reports, such as those from the Education Endowment Foundation (EEF) and Darling-Hammond et al. (2017).

This comprehensive data collection ensures that findings reflect both global trends and classroom-level realities.

Inclusion and Exclusion Criteria

To ensure methodological rigor, studies were selected according to the following criteria:

Inclusion criteria: Empirical studies, meta-analyses, and policy reports demonstrating measurable effects of instructional strategies on student learning or teacher effectiveness. Studies had to employ rigorous methodology and be published in reputable, peer-reviewed sources.

Exclusion criteria: Anecdotal reports, opinion pieces, or research without measurable learning outcomes were excluded. Studies focusing solely on non-instructional interventions, such as infrastructure or administrative changes, were also omitted.

These criteria ensure that only high-quality evidence relevant to instructional effectiveness is synthesized.

Data Extraction and Analysis

Key information was extracted from each study, including:

- Research design and participant demographics.
- Type and characteristics of instructional strategies employed.
- Measured outcomes, such as student achievement, engagement, or teacher practice improvements.
- Contextual variables, including grade level, subject area, and learner diversity.
- Effect sizes or performance gains reported in quantitative analyses.

Data were thematically analyzed and categorized into key instructional domains: explicit instruction, formative assessment, feedback, collaborative learning, metacognitive strategies, cognitive load-aligned instruction, technology integration, and professional development. Patterns and consistencies across studies were identified to highlight best practices and the conditions under which they are most effective.

Analytical Procedures

A comparative and interpretive analysis was conducted to evaluate the relative effectiveness of instructional strategies. This included:

Comparing quantitative effect sizes across studies and subjects.

Evaluating implementation factors, such as teacher preparation, classroom resources, and instructional fidelity.

Integrating theoretical perspectives, including cognitive load theory, social constructivism, and metacognitive frameworks, to interpret variations in effectiveness.

This approach ensures that conclusions are grounded in both empirical evidence and pedagogical theory.

Ethical Considerations

Although this study is a synthesis of secondary research, ethical standards were rigorously observed. All sources were publicly accessible, peer-reviewed, and properly cited. Only studies adhering to accepted ethical protocols in research involving human participants were included, ensuring the integrity and credibility of the analysis.

Limitations

While the meta-synthesis is comprehensive, some limitations exist. Differences in research designs, contexts, and assessment tools across studies may affect comparability. Additionally, much of the research originates from developed countries, which may limit the applicability of findings to under-resourced or culturally diverse educational settings. Despite these limitations, the methodology provides a reliable, evidence-based overview of instructional practices and their impact on learning and teaching.

Findings and Discussion

The synthesis of research on evidence-based instructional strategies highlights several key approaches that consistently enhance student learning outcomes and teacher effectiveness. Across multiple studies, meta-analyses, and large-scale assessments, a pattern emerges demonstrating that structured, research-informed pedagogical methods outperform traditional or intuition-based teaching in terms of student achievement, engagement, and retention. The following subsections discuss the main findings in detail.

1. Explicit Instruction

Explicit instruction, as conceptualized by Rosenshine (2012), emphasizes well-sequenced lessons, clear explanations, modeling of procedures, guided practice, and immediate corrective feedback. Findings from Project Follow Through and subsequent studies confirm that students receiving explicit instruction consistently demonstrate higher achievement in reading, mathematics, and problem-solving compared to peers exposed to less structured or constructivist approaches. Explicit instruction reduces ambiguity, strengthens cognitive schema, and

fosters long-term retention. Moreover, novice learners with limited prior knowledge benefit most, as structured guidance reduces cognitive overload and enhances comprehension (Sweller, 1988; Paas et al., 2003). These findings underscore that explicit teaching is particularly effective for foundational skills and complex problem-solving tasks in STEM subjects.

2. Formative Assessment and Feedback

Formative assessment emerged as a critical component of effective instruction. Research by Black and Wiliam (1998) demonstrates that teachers who regularly monitor understanding, provide timely feedback, and adjust instruction accordingly can accelerate learning by up to six additional months per academic year. Feedback that is specific, actionable, and focused on processes rather than mere praise is most effective (Hattie & Timperley, 2007; Shute, 2008). Formative assessment practices—such as questioning, observation, exit tickets, peer discussions, and self-assessment—enable teachers to identify learning gaps and intervene before misconceptions become entrenched. Consequently, integrating formative assessment into everyday instruction supports personalized learning and promotes student self-regulation.

3. Collaborative Learning

Collaborative learning strategies, including Jigsaw, Student Teams Achievement Divisions (STAD), and peer tutoring, have been shown to enhance both academic and socio-emotional outcomes. Johnson and Johnson (2009) report that structured cooperative learning improves reasoning, communication, and persistence, while Slavin (2014) confirms that clearly defined roles, individual accountability, and positive interdependence maximize learning gains. Collaborative settings also foster peer support, enhance motivation, and cultivate problem-solving skills. Hattie's (2009) meta-analysis indicates that when well-implemented, cooperative learning consistently produces effect sizes above average instructional gains, demonstrating its robust impact across diverse subjects and learner populations.

4. Metacognitive and Self-Regulated Learning Strategies

Metacognitive instruction equips learners with skills to plan, monitor, and evaluate their own learning, fostering autonomy and transferability of knowledge. Research by Zimmerman (2002) and the EEF (2018) highlights that students trained in self-regulated strategies achieve gains equivalent to seven additional months of learning. Pressley and Afflerbach (1995) further indicate that explicitly teaching strategies such as summarizing, predicting, questioning, and self-monitoring significantly improves comprehension and retention. These findings reinforce the value of embedding metacognitive instruction into regular teaching practice, particularly for enhancing independent problem-solving and lifelong learning skills.

5. Cognitive Load–Aligned Instruction

Cognitive load theory emphasizes that working memory is limited, and instruction should be designed to minimize extraneous cognitive demands. Studies by Sweller (1988) and Paas et al. (2003) show that structured instruction, modeling, and step-by-step guidance reduce unnecessary cognitive load, enabling learners to process complex information more efficiently. This principle is especially critical in STEM subjects, language acquisition, and other domains with high conceptual complexity. Lessons that gradually increase complexity while providing scaffolds help maintain learner engagement and optimize knowledge acquisition.

6. Technology-Enhanced Learning

The integration of digital technologies in classrooms can support feedback, adaptive practice, and collaborative learning, but their effectiveness depends heavily on pedagogical alignment. RAND Corporation studies (Pane et al., 2015) demonstrate that personalized digital learning systems improve mathematics achievement when used within structured instructional routines. However, OECD (2020) cautions that unstructured or excessive technology use may distract learners. The evidence suggests that technology is a tool rather than a standalone solution, and its value is realized only when teachers effectively integrate it to complement evidence-based strategies.

7. Teacher Professional Development

High-quality professional development is essential for the consistent implementation of evidence-based instruction. Darling-Hammond et al. (2017) indicate that sustained, content-focused, collaborative training programs with coaching or mentoring lead to measurable gains in student achievement, averaging approximately 21 percentile points. Continuous professional learning enhances teacher confidence, instructional planning, reflective practice, and data-informed decision-making. These findings emphasize the necessity of institutional support and ongoing professional growth to ensure the fidelity and sustainability of research-based strategies in classrooms.

8. Data-Driven Instruction

Systematic use of assessment data enables teachers to tailor instruction to student needs and track progress effectively. Studies by Wayman and Jimerson (2014) and Hamilton et al. (2009) reveal that structured data analysis cycles allow educators to identify misconceptions, design targeted interventions, and personalize learning. Data-driven practice encompasses standardized assessments, classroom observations, student work, and self-reports. When effectively applied, it enhances instructional alignment with learner needs and promotes adaptive, responsive teaching.

Integration and Implications

Overall, the findings demonstrate that combining multiple evidence-based strategies creates synergistic effects, leading to higher academic achievement, deeper understanding, and increased student engagement. Effective instruction requires a balance of structured guidance, formative feedback, metacognitive support, collaborative learning, cognitive load management, appropriate technology use, and continuous teacher development. The research further highlights that these approaches are adaptable across cultural and contextual boundaries, supporting both equity and inclusion in diverse educational settings.

In conclusion, the findings underscore that evidence-based instructional strategies provide a reliable, research-informed framework for enhancing both teaching quality and student learning outcomes. Their implementation requires deliberate planning, professional support, and ongoing evaluation to maximize effectiveness, making them indispensable in contemporary education.

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MOTIVATION-BASED LEARNING AS A PSYCHOLOGICAL CONDITION FOR ENSURING QUALITY IN TRAINING

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SUMMARY

In modern times, education in all countries of the world is based on a number of new paradigms as a socio-cultural phenomenon, aiming to improve quality indicators. As well as the content of education, its forms and means are being updated, and a result-oriented educational paradigm is being formed with the application of innovative educational technologies.

The new requirements for education require the optimization of its important structural components, namely, teaching and learning processes. It is impossible to achieve the desired results without motivating the learning activities of learners. Therefore, the formation of a motivation-based learning environment in training attracts attention as an urgent problem.

Motivation-based learning in the educational process is an important psychological condition for improving the quality of students' learning, academic success, and an important component of eliminating chronic failures in learning. A student motivated for success actively participates in learning, feels the joy of learning. As in other types of activities, external and internal motives have a stimulating function in educational activities. External motives are conditioned by the demands and instigations of other people, and internal motives are conditioned by the interests and desires, enthusiasm, and orientation of the student. The article is devoted to learning motivation, which is one of the current topics of pedagogical psychology.

The introduction explains the scientific essence of key concepts such as "learning", "motivation", etc., and the author argues his own ideas and opinions explored in the article, referring to scientific sources where appropriate.

The article discusses the role and importance of external and internal motivation for improving the quality indicators of students' learning activities. It was determined that the motives perceived in learning stimulate the assimilation of knowledge and ensure the quality of social learning activities. The determinants of students' chronic learning failures in the learning process and the factors that condition them were investigated, and the lack of motivation was noted as one of the determinants of learning failures as the main factor.

Keywords: motive, learning motives, learning, intrinsic and extrinsic motivation, motivation to achieve success and avoid failure

Introduction

New trends observed in the development of education in the modern era and new paradigms being formed are mainly aimed at improving its quality indicators. In this regard, increasing the level of acquisition of students is a topic of wide discussion as one of the urgent problems that resonate with global challenges.

In the era of information and communication technologies we live in, the improvement of the content of training, which is the main component of the education system, as well as its forms and means, is a necessary requirement, and new, innovative teaching technologies are becoming one of the integral components of education. In this regard, the role of cognitive and metacognitive knowledge in training is increasing, and the creation of internal motivation for learning and motivation-based learning are becoming a priority task in improving the quality of students' assimilation and knowledge acquisition.

Purpose

Learning is a continuous and purposeful activity that serves to create positive changes in a person's physical and mental (mental) activity, as well as in his behavior, and its result. Training, like all other types of activity, is a special form of

activity based on motivation, implemented with the unity of the cognitive, volitional and emotional spheres of a person and having a learning content. Learning is a cognitive activity based on motivation. Motivation (motivation) is a set of motives that provide orientation of the personality, are connected with its interests, goals, intentions, etc., and are conditioned by stimuli. Motivation is expressed in the connection and relationship between the stimulus and the goal of the activity, and in this case, the motive can become the goal, and the goal can become the motive. The purpose of the research work is to investigate the possibilities of forming positive learning motivation in learners, to identify means that stimulate the motivation to achieve success in them.

Significance

The scientific results obtained from the research work are of theoretical and practical importance. The formation of positive learning motivation in school-age children promotes their academic success and guarantees the improvement of learning outcomes. Teachers and parents, being familiar with the scientific and psychological characteristics of the formation of learning motivation in children, can ensure their high results in their educational activities and motivation-based learning.

Theoretical Basis

Motive is a motivating force that directs a person to any work or activity. The prominent Russian psychologist Alexei Nikolayevich Leontyev called the factors arising from a person's needs and directing him to satisfy those needs "motive". According to A.N. Leontyev, a motive can also appear in the form of an image, concept, idea, ideal.

In psychology, the term "motivation" has a wide and narrow meaning. In a broad sense, "motivation" is a term that belongs to the field of psychological research and characterizes the motivating, directing and supporting behavior of a person at various levels of activity. This area of scientific research was distinguished in psychology at the beginning of the 20th century and distinguished as an independent psychological phenomenon.

Among all the concepts used in the field of motivational psychology, the concepts of "demand" and "motive" occupy a central place. "Motive" from the Latin "movere" (to move, push), (French - "motiver" - to move, to be the source of movement, to control and regulate it) is by its nature the source of internal psychological and physiological movements and determines their activity and purposefulness. In almost all areas of modern psychology, when studying the causes and mechanisms of purposeful human behavior (as well as the behavior of animals), the term "motivation" is widely used. (Karpenko, 1985: 190).

In world psychology, the researches of Z. Freud, K. Lewin, G. Allport, A. Maslow, J. Nutten, H. Hekhanzen, etc. are well-known in this field. Motivation, in a broad psychological sense, is the unity of the goals facing a person and it requires the mobilization of the internal and external motivating forces and capabilities of the personality.

In the process of activity, the motives of "striving for success" and "avoiding failure" are of paramount importance in the motivation of a person. Striving for success and avoiding failure are relatively independent motives that are not dependent on each other. However, in the process of activity, each of these motives can manifest itself in the same person. Depending on their strength, they can be equal or different, and can be combined with each other in various ways. (For example, a chess player says: "Even if I cannot win, I am satisfied with a draw. I just don't want to lose"). These motives affect a person's status in society, his position and fate. People with a strong motivation to succeed are more likely to achieve success in life and advance in their careers. Most people with a strong motivation to avoid failure are not only more likely to succeed, but they are also more likely to accept their failures.

The basis of the theory of achieving success in motivational psychology was laid by American psychologists D. McClelland, C. Atkinson and German psychologist H. Hekhanzen. According to their conclusion, this need is formed in a person during the first 10-12 years of life. The development (origin) of this need depends on how the child is raised in the family, the attitude of people around him to his success and failure. The need to achieve success arises because the person who has it tries to do everything better, always takes as an example higher standards or examples of success, and moves towards them. Such a person, with his own preparation, joins all tests and competitions, including exams, with the determination to be the winner among his peers. Therefore, it is very important for the results of his activities to be evaluated and appreciated by other people. If he fails in any test, competition or event, he does not give up, does not lose enthusiasm, and mobilizes his efforts to the maximum to achieve success. He repeats his attempts many times

until he achieves the desired result. A person motivated by success always feels confident, has adequate self-esteem and a high level of ambition. A person with a need to avoid failure does not exert the necessary effort to achieve success in his activity. He is satisfied with the result he has achieved and reassures himself that "I have nothing to lose", and accepts his previous status and results. The most important thing for him is not to achieve new success, but to avoid failure, that is, not to lose what he has previously achieved, to maintain his previous status. In other words, he does not want to be either the first or the last. The middle position satisfies him completely. The motive for striving for success and avoiding failure begins to form in early childhood.

Most preschool children react emotionally to their success or failure in the process of their activities, experiencing positive or negative feelings depending on the result. The child is not only happy with the success that is the result of his activities, but also feels a sense of pride in his own way, trying to demonstrate his personal dignity. One of the features that attracts attention in the psychological face of children at the age of 5-6, in the regulation of behavior in terms of emotional and motivational aspects, is the mutual subordination of motives. Children try to subordinate their random desires and inclinations to higher moral motives by slowing them down. They learn from their elders what happened in the past when they were younger and what will happen in the future, and they sympathize with the actions of strong, brave, kind, and intelligent people.

During school age, children's motivation to achieve success and avoid failure is conditioned by their main type of activity, learning, and is directly determined by learning outcomes. The determinants of students' chronic failures in school learning are multifaceted. Among them, the most common reasons include children's insufficient readiness for school learning and failure to reach the level of "school maturity". Poor development of fine motor skills is one of the major obstacles that young schoolchildren face in learning to write.

Since they cannot control their fingers and fine movements of the finger joints, they have difficulty writing letters and numbers according to calligraphic rules. The low level of cognitive processes and their high level of involuntariness prevent children from understanding the teacher's verbal instructions. The nature of family relationships, authoritarian family upbringing style, constant family conflicts, asthenia, general weakness of working capacity, the child's body and immune system can also be considered the main causes of chronic learning failures. The results of psychological studies show that 18-20% of young schoolchildren make spelling mistakes, 15-16% are inattentive and absent-minded, 15-16% have problems with problem solving, and 14% have problems with retelling the text. 10-12% of young schoolchildren do not know the addition and multiplication tables perfectly, 20% have difficulties in completing homework independently, and about 10% forget their notebooks, books, and other supplies at home. (Istratova, 2008: 126).

The academic success of students in their learning activities directly depends on the factors that promote their acquisition of knowledge, skills and habits. Among them, perceived motives are the main factor. Their learning success depends not only on the ability and abilities of students to learn, but also on their learning motivation. According to their role in the learning process, motives are of situational and broad motives, motives directed at activity and its results, egoistic and socially significant motives, and according to their manifestation characteristics, broad social motives, motives of learning activity.

As in other types of activity, external and internal motives manifest themselves in training activities. Many foreign psychologists attach special importance to the role of internal motivation in training activities. This issue attracts more attention in the studies of the English psychologist John Bruner. He noted that the desire to know everything, the desire for competence (gaining experience, mastering skills, possessing knowledge and skills, etc.) is primarily related to interests. "Russian psychologist G.I.Shchukina noted that a strong internal motive is based on cognitive interests. External motives are caused by the instigation of others, while internal motives are caused by a person's interests and desires, orientation, beliefs, convictions, and worldview. For example, a student's good study can be caused by both external and internal motives. Russian psychologist LY.Subbotina calls the internal and external factors of learning motivation "base factors" and divides them into two groups: internal and external. She includes the level of abilities and skills, volitional effort, and the degree of difficulty of the task, social factors, and random factors, as internal factors. (Klyuyeva, 2003: 364).

Students' awareness of the importance of reading does not always become a motivating force that directs them to educational activity. Only perceived motives in most cases act as a real influencing force. A first-grader tries to do his

homework himself. He knows that he needs to prepare lessons, otherwise he may disappoint his parents by receiving an unsuccessful grade. Reading is his school duty and duty. This manifests itself in the student as an internal motive for activity. However, this cannot be attributed to all students. Let's look at another case:

The parent tells the child: "You won't go out to play until you finish your homework" This is an external motive that parents use to encourage the child to take action. In many cases, strict parental control, prohibitions and sanctions imposed on the child also stimulate the motive for action. The child understands that after preparing his homework, he will have the opportunity to play. This motive satisfies the child in every way: on the one hand, he manages to get a good grade, and on the other hand, he manages to please his parents. Motivation in the learning process manifests itself in the form of the student's acceptance and understanding of the goals and objectives of the training. Motivation can be positive and negative. For example, if a student shows a desire to study and tries to perform learning tasks at a high level, this indicates the presence of positive motivation in him. If another student tries to avoid lessons and exercises with all his might, then he has negative motivation towards learning activities. The activity of assessing the level of mastery is of particular importance in terms of motivation. While the lesson is interesting for some students, it seems boring and dull to others. Some students study enthusiastically, while others show passivity and laziness.

Motivation in the learning process has its own psychological characteristics. As in other types of activity, in learning, motives and goals are the main components. The goal is the intended and perceived result of the activity. The goal set in learning activities is, as a rule, clear to the teacher and students. Goals are (or should be) set in the lesson and should be quite clear. Motives, however, are not always clear to the teacher and students.

Depending on the nature of the motive for action, it has different meanings for the child. The child solves the problem. The goal here is to find the correct answer by solving it correctly. Motives in this situation can be different. One of them may be to gain the teacher's favor, and another may be to please the parents by getting a good grade. Motives affect the nature of the learning activity, the child's attitude to learning. If, for example, a child studies because of fear of getting a bad grade or punishment, then he is under constant stress. In this case, learning deprives him of the joy of intellectual labor. "The negative attitude of schoolchildren to learning is associated with subjective and objective reasons. Subjective reasons are mainly related to the individual characteristics of children, and objective reasons are related to the activity of the teacher, the difficulty of the subject, etc." (Gamezo, Petrova, Orlova, 2003: 303).

Motives are perceived and unrecognized. Even unrecognized motives themselves are manifested in certain emotions, but the child does not realize the motive that directs him to action. That is why the desire to do or not do something forms the basis of positive and negative motivation. As a rule, the child's learning activity is based not on one motive, but on a whole system of various motives, and they are in various interactions and relationships with each other. Not all motives have the same influence on the child's learning activity. Some of them are leading, and some are secondary. In the learning process, some motives arise in the course of learning activity and are directly related to the content of the learning process and the methods of mastering knowledge. Other motives are outside the boundaries of the learning process, and learning is associated only with broad social motives (attempting to finish school with good grades and enter higher education, having a certain level of preparation for one's future profession, etc.) and social (living in prosperity, gaining the approval of teachers and parents, standing out from classmates, having a superior status in the class, etc.) motives. "Cognitive interests are deep internal motives based on innate cognitive needs and inherent only to humans." (Rotenberg, Bondarenko, 1989: 41).

Studies devoted to the study of learning motives of younger schoolchildren show that motives related to the content and nature of learning activities occupy a leading place in this age period. Studies of the Russian psychologist L.I. Bozhovich on the learning motives of younger schoolchildren showed that such motives are in third place for first-grade students and in fifth place for third-grade students. The formation of learning motives has its own characteristics in the younger school age period. Usually, the nature of learning motives that arise during this period influences the development of these motives in later periods. The motivational basis for the implementation of learning tasks and operations in the early stages of primary school age is determined by internal and external factors. "The success of schoolchildren in their learning activities, their academic success, depends not only on the level of development of their intellect, but also to a significant extent on the role of motivation that sets the intellect in motion." (6)

Methodology

During the research process, school-age children were asked questions such as “Why do you read?” and “What makes you read?” They mentioned various motives as their motivating forces in their learning activities. At the same time, observations were conducted on individual students, as well as schoolchildren of different ages, to determine the continuity and stability of these motives, and their activity in lessons was monitored. Observation, comparison, analysis, synthesis, verbal survey, analysis of activity products, and mathematical-statistical methods were used in connection with the research. In the research process, changes in the dynamics of motives were determined in schoolchildren depending on their age, and the stabilization of situational motives depending on their age dynamics was recorded. “When talking about the dynamic characteristics of motives, it is necessary to note their 3 main features. First, the continuity of motives (i.e., even when learning conditions change or become unfavorable, the student continues to learn without paying attention to them). Second, the modality of motives, i.e., their emotional coloring. This is reflected in the negative and positive nature of learning motives. Third, the strength of motives. This is determined by the expressiveness of motives, their rapid emergence, and the time spent by the student on completing tasks. (Gamezo, Petrova, Orlova, 2003: 299)

Grades play a significant role in the motivation of younger schoolchildren to learn. Psychological studies have shown that all younger schoolchildren understand the objective role of grades in learning. However, the direct relationship between grades and knowledge is not fully understood by all schoolchildren. Children note that grades make them and their parents happy or sad. That is why studying for the sake of getting good grades acts as a motivator for many children.

As a result of the study, it was determined that not all motives have the same degree of influence at different age periods and for different students. Usually, for different age periods and for different students, one of these motives is the main, leading, while others are secondary, auxiliary, and the following ones are always subordinate to the main motive to one degree or another. This is also proven by a number of psychological studies. In one case, the desire to be an excellent student in the class, to take the place of an excellent student, in another case, to continue one's education in the future, to get a higher education, and in another case, interest in knowledge itself can manifest itself as such a leading, main motive. “Learning operations such as logical processing of educational material, planning, and separating the important from the unimportant are formed during adolescence.” (Bojovich, 1979: 20). As a result of surveys conducted with adolescents during the research process, it was determined that the most important learning motives during adolescence are the awareness of social duty, the desire to receive recognition and rewards, the desire to attract the attention of others, the desire to imitate others, the desire for self-discipline, etc.

When studying the learning motives of upper-grade students, it was found that these motives were ranked in the following order according to their importance: the content of science; the importance of science in modern life; attachment to personal interest; the teacher's personality and teaching method; the desire to increase knowledge; the practical importance of education in life; motives related to prospects (preparation for higher education, attachment to future profession); cognitive motives; citizenship motives; motives for communication with peers; and self-education motives. The predominant role and importance of such learning motives were determined.

As a result of the study, it was revealed that indirect learning motives (here, first of all, internal, cognitive motives are meant) have great didactic significance, in addition to their emotional and social significance. Such motives arouse activity in a person towards objects of cognition, stimulate him to more businesslike and creative activity. Especially in adolescents and senior school-age students, indirect motives prevail over indirect motives.

Therefore, it is a pedagogical and psychologically important condition for the teacher to constantly take this fact into account in his activities. If even the highest level of mediated motives are referred to in teaching activities, teaching will become a duty for schoolchildren, and teaching work will be carried out only based on a sense of duty. Otherwise, the schoolchild will never be able to feel the pleasure of spiritual improvement of cognition either at school or after school.

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PSYCHOLOGICAL BASIS OF YOUNG PEOPLE'S PROFESSIONAL CHOICE

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ABSTRACT

Education is a strategic area of state-building and the future development of the state. Future development largely depends on the level of preparation of today's people. Therefore, the issues of preparing young people for the future pose more important tasks for the modern education system.

Today, school psychologists have great responsibilities and tasks in shaping the younger generation as psychologically healthy, capable of properly planning their future, closely aware of their talents and abilities, in short, young people who know themselves well. Therefore, one of the most important duties of school psychologists today is to assist young people on the verge of high school graduation in choosing a career, which is one of the basic, important and responsible stages in determining their future lives, and to provide psychological guidance activities. At the same time, school psychologists are personally responsible for raising individuals who are beneficial to society by evaluating their talents and skills, individual psychological characteristics and potential opportunities at a high level. Naturally, in this responsible work, school psychologists should carry out the necessary work not only with young people, but also with their families. Because the family is an important institution that has a great impact on young people's career choices. From this point of view, the organization of systematic and professional activities in guiding young people to choose a profession has a direct impact on the correct direction of the country's human capital. In this work, school psychologists have a great responsibility.

Keywords: young people, professional choice, psychological characteristics, theories of professional choice, stages of psychological guidance to professional choice.

Introduction

Choosing a profession is one of the important stages that affect the future lives of the young generation, their successful activities and development, self-awareness and self-affirmation. In this regard, psychological service activities carried out at school play an important role in helping young people with issues related to their career choices. Even today, the number of professions on the choice list in the world has reached 50,000, so the importance of psychological guidance services for career choice in schools has increased even more. Of course, the emergence of artificial intelligence in recent times and the fact that many professions will disappear due to this is a known reality. In this regard, it is very necessary for young people to make the right choice in their specialization in our time.

Having a profession is not only to provide people with financial security for their future lives, but also stems from the desire to be accepted in society, the need for self-affirmation, the desire to communicate with other people and be useful to society.

A person gains spiritual and psychological comfort by using his abilities and talents, and asserts himself in the social environment. Thus, self-confidence and respect are formed. In addition, by providing service in any field in society, by being a useful person, one gains social acceptance and value. During labor activity, we communicate with other people, and gain our social identity with certain roles and duties. Therefore, the foundation of any labor activity is also the satisfaction of a person's psycho-social needs.

One of the most important socio-psychological issues is the formation of young people as psychologically healthy people, able to plan their future, who are closely aware of their talents and abilities, in short, who know themselves well. It is very important for school psychologists to assist and guide students in the career choice process, which is one of the important and responsible stages in determining their future lives. The success of this work also lies in the fact that the young generation is constantly developing themselves in the professions they have in accordance with the needs of society and is formed as useful people to society. Naturally, in this work, necessary work should be carried out not only with schoolchildren, but also with their families. Because the family is an important environment that greatly influences the choice of profession of young people.

Aim

The main purpose of the study is to take into account the potential knowledge level of young people, as well as their abilities, talents, character and temperament types, in order to properly organize psychological assistance activities in guiding them towards a professional choice. This article was written in order to enrich the scientific-theoretical foundations of the implementation of psychological assistance activities.

Significance

The fact that school psychologists, scientists working in the field of psychology, and practical psychologists benefit from the generalizations, scientific-theoretical analyses and proposals brought to attention in the article shows the importance of the study.

Theoretical Basis

There are various approaches to the psychological foundations of young people's career choice. Professor Frank Parsons, who was the first to engage in youth employment in the USA, opened the Career Orientation Bureau in Boston in 1908. This institution guided young people to careers and helped them choose a suitable profession. He first applied the "person-workplace" theory in his practice and attempted to reveal the mutual relationship between the individual qualities of the personality and the characteristics of the profession. F. Parsons' method soon became popular in the USA, and career orientation bureaus were established at many industrial enterprises. In 1913, the corresponding National Association was established in the USA.

J.L.Holland explains his idea of career choice based on people's character traits and levels of social adaptation. He notes 6 character types: realistic, intellectual, social, traditional, enterprising and artistic (Yeşilyaprak, 2024). According to this view, in order to choose the right profession in career choice, it is important for a young person to know which character type he belongs to and to determine the professional fields suitable for that character type. According to J.L.Holland, the 6 character traits and the professions corresponding to them are as follows:

1. Realistic type. A person who is always inclined to see reality. He is more inclined to activities related to muscle and physical strength. He is strong and powerful. He is more inclined to outdoor work. He is harsh, aggressive, rude, lacking the ability to speak, and avoiding logical thinking. He is more inclined to practical work than thinking. Driver, farmer, engineer, etc.
2. Intellectual type. They are intelligent people. These people tend to think logically rather than practical work. They are not people who like to talk like the realistic type. They do not use their speech abilities to the proper level. They avoid communicating with people. They do not like to control or be controlled. They are polite, radical, and original people. Scientists, researchers, philosophers, etc.
3. Social type. The main feature that distinguishes this type from the first two types is their skillful use of speech abilities and their tendency to actively communicate with people. These are people with the characteristics that are important for people working in the pedagogical and medical fields. The main character traits are being social, having a constant positive emotional state, adventurous, high leadership qualities, inclined to practical thinking, and responsible. Teachers, psychologists, doctors, etc.
4. Traditional type. They are extremely attached to customs and traditions. They do not worry about taking or giving orders. They have strong self-control. They are very attached to power and social position. They are formal, sometimes fun-loving, practical-minded people. Military personnel, bank employees, civil servants, etc.
5. Enterprising type. They are the type with the power of suggestion, speech skills and the ability to express themselves at the highest level. The social type works for others, while this type works for itself. They are social, adventurous, independent, active, aggressive, practical-minded types. Salespeople, politicians, managers, etc.
6. Artist type. These people express themselves indirectly by using the people around them. They are the exact opposite of the traditional type. They do not like rules and regulations at all. They cannot fully control themselves. They are childish and have a high level of independence. Writer, artist, actor, musician, architect, etc.

Recently, the theory of multiple intelligences, which was proposed by American psychologist Howard Gardner in 1983, has been widely applied in world education. With the theory of multiple intelligences, Howard Gardner proposed that the human brain has 8 intellectual fields and that tests used to measure IQ or other mental potential are not very effective methods in this work. According to H.Gardner, the eight fields of intelligence and the professions corresponding to them are:

1. Verbal intelligence. This type of intelligence is found in people who succeed in fields that require verbal ability. They are people who use language very well, know and apply the rules of language, and tend to learn new languages. These people are very creative in writing. They love reading. The professions chosen by people who excel in this intelligence are: writing, politics, literature, etc.
2. Mathematical-logical intelligence. These people have the power of logical thinking. It is found in people who succeed in many fields related to mathematics and can analyze different aspects of events and problems. They are more successful in establishing part-whole and cause-effect relationships. They are very skilled and talented in problem solving. The professions chosen by people who excel in this intelligence are: mathematician, engineer, statistician, computer engineer, etc.

3. Visual intelligence. Their observation skills are extremely strong. In general, visual intelligence increases the quality of learning. They pay attention to the details and small details of the schemes, drawings, etc. they see. Professions that they can be successful in choosing a profession: painting, architecture, acting, etc.

4. Musical-rhythmic intelligence. They are sensitive to everything related to music. They perceive the melodies and rhythms in the music they hear very quickly. They can easily distinguish the musical instruments used in that music when a piece of music is played. Professions chosen by people with a high level of this intelligence: singing, composing, music teaching, etc.

5. Physical-kinesthetic intelligence. This type of intelligence is superior in people involved in sports. They attach great importance to physical strength. Main professional choices: dancing, sports, competition refereeing, etc.

6. Internal intelligence. This intelligence means that a person knows everything about himself and understands his inner potential and capabilities. People with high internal intelligence are people who have deep knowledge about their abilities, interests, and their own inner potential. The main professions they choose: businessmen, leaders, etc.

7. Social intelligence. They are people who succeed in interpersonal communication. They easily perceive the characteristics of people and attach importance to communication issues. People with a strong sense of empathy are found. Such people mainly choose these professions: psychologist, interpersonal communication specialist, etc.

8. Naturalistic intelligence. They are found in people who are interested in issues related to nature. They study animals, plants, and natural phenomena and try to analyze the causes of their occurrence. The main professions they choose: veterinarian, agronomist, zoologist, biologist, etc. (Gardner, 2004).

In the pedagogical process, psychological guidance services for career choice are implemented in three stages:

1. Getting to know young people.

2. Exploring professions.

3. Establishing a connection between the individual characteristics of schoolchildren and the characteristics required by professions.

1. Getting to know young people in psychological guidance for career choice. The main goal of youth identification activities is to help them get to know themselves comprehensively. A person who knows himself comprehensively can determine in which field he will be most useful and make the right decision regarding his future activities.

It should always be noted that it is important to examine the individual characteristics and qualities of young people from various angles for the purpose of career choice guidance. It is not right to guide young people to professions based on just one or a few individual characteristics. For example, young people who are guided to a certain profession based on their academic success, abilities and interests should not be expected to succeed in their future specialties, feel satisfied and affirm themselves. Because, considering that there are various factors that affect a young person's career choice, the more attention is paid to these factors in career guidance, the more successful and appropriate the result will be.

Among the factors that affect a young person's career choice are mental abilities, special talents and skills, various character traits and self-awareness, interests, educational success, gender, environmental factors, especially the socio-economic level of the family, the profession of the parents, family traditions, and also the level of preparation for the profession of the young person.

I. The state of the young person's abilities, talents and educational success. Naturally, in directing young people to a particular profession, revealing their abilities and talents, as well as the level of knowledge and skills related to the professional fields they will pursue, are important factors.

II. The individual characteristics of the young person. The young person's general health, level of physical strength and power, physical appearance and body structure, whether there are any physical defects, values, sensory and emotional characteristics, the main motives that direct him to activity, social activities, thoughts and plans for the future.

III. Characteristics of the young person's main interests and inclinations.

IV. Characteristics of the activity program depending on the young person's wishes.

V. Family approach.

The results obtained regarding the youth, taking into account the existing conditions, the opinions of parents, teachers, and class teachers regarding the youth should be summarized, and suitable professions should be determined for them, and these options should be presented to the youth and the youth should make the choice.

A person is born with the natural opportunities necessary to acquire the appropriate abilities for any field of activity. These natural opportunities turn into abilities when the environment works on those opportunities. If the environment does not reveal these opportunities and work properly, then in many cases these opportunities do not turn into abilities and simply remain "dead opportunities". In general, abilities constitute the mental properties of a person by adding knowledge, skills, and habits acquired as a result of social influences to innate characteristics. For this reason, abilities

should not be confused with the educational success of young people. Thus, educational success can give us information about abilities in some cases, but is not the same as abilities.

However, it is also necessary to pay attention to one aspect: simply knowing abilities is not enough to direct oneself to a profession. Another important aspect is knowing interests. When a person feels interested in his profession, he achieves high success in that profession. On the contrary, when there is no interest in his profession, those tasks become boring, do not attract the person's attention, create a special feeling of anxiety in him, and the person feels inadequate. All this also negatively affects the person's self-esteem.

2. Researching professions. The second stage of socio-psychological guidance services for career choice is the stage of researching professions and obtaining information. Due to the large number, many difficulties arise in researching professions. For this, a research plan should be prepared. In order to help prepare a career research plan, we can list the questions that need to be answered in researching professions by taking advantage of the scientific research conducted by J.A.Humpey and his colleagues as follows:

- What are the characteristics of the work that forms the basis of the profession? (main activities, responsibilities, authority and duties related to the performance of the profession).
- What abilities does the profession require? (general and specific abilities necessary for the profession).
- What are the characteristics of the level of education required for the profession? (duration of education, tuition fees, whether special training is required).
- What are the conditions necessary to start a profession? (whether or not there is an exam for entry into the profession, how and by whom the exam will be taken, how the document acceptance will be conducted, etc.)
- Are there any restrictions on entry into the profession? (restrictions such as nationality, religion, language, race, restrictions in terms of physical characteristics, etc.)
- What are the working conditions? (daily working hours, seasonal work complexity, work risks, whether there is an opportunity to overcome these risks, etc.)
- What is the personnel need and direction of personnel placement in the chosen profession? (importance of the profession, whether this importance will increase, the need of society for this profession and the necessary manpower, etc.)
- What is the income of the chosen profession? (what are the salary, insurance and pension opportunities, are there opportunities for promotion in the profession, transfer to other related jobs and professions?)
- Does the chosen profession have the ability to continue throughout life? (whether the profession has the ability to be a permanent job for young people) (Yeşilyaprak, 2024).

The main goals of providing information about professions to young people are:

1. To provide information to young people about the unknown characteristics of the profession they are interested in and are considering choosing.
2. To introduce young people to professions about which they are wrong or have little knowledge, and to expand their knowledge in this field and provide them with a richer choice of options, thereby ensuring that they make the appropriate choice.
3. To provide information about the benefits of choosing a profession that is beneficial to society and allows young people to assert themselves.

3. Connection between the individual characteristics of young people and the characteristics required by professions. This stage is the process of establishing a connection between the individual characteristics of young people and the qualities required by professions, specifically the process of making a choice and decision-making, to reveal the professions that are suitable for the young person. It should always be kept in the center of attention that the right and responsibility should be given to the young person in the process of choosing and making a decision, even if it is for the purpose of psychological guidance in choosing a profession. In other words, it is very important to provide the necessary information to the young people, as well as to create conditions for them to make the final decision themselves.

Establishing a connection and connection between the individual psychological characteristics of a person, which are constantly forming, developing and changing to a certain extent, and the characteristics of professions, which are changing frequently and gaining new qualities, is a difficult process. Activities carried out for the purpose of choosing a profession should be open and continuous for every teenager and young person.

Research shows that young people do not have sufficient knowledge and information about the professions that are most in demand and in need in the country. In this regard, parents, educators, and psychologists should provide necessary assistance to young people who are in the process of deciding on their career choice, advise them to take the needs of the country into account, and inform them on this subject.

Comments

Career guidance activities carried out at school should be regularly monitored by the school administration, and the work carried out should be evaluated. From the generalization of the researched sources, it is possible to conclude that the proper organization of activities for directing young people to professions according to their abilities, talents, potential opportunities, and character traits creates the basis for the proper use of human potential in a country. A number of principles should be followed in directing young people to professions, which mainly consist of the following:

- The principle of responsibility. Guidance is not compulsory, it should be carried out by encouraging the other party to do this, and it should be ensured that the decision made by young people is in line with reality. However, conditions should be created for students to decide for themselves which specialty and profession they will choose, and to take responsibility for themselves.
- The principle of continuity. The guidance of young people to professions should not be an activity carried out only in the upper grades. These works should start from the lower grades. The information obtained by a school psychologist about primary school students using a number of methods should be continuously analyzed, the stages of development of professional interest in students should be studied, and the status of their knowledge, skills, habits, abilities, and talents should be determined within a certain time frame.
- Principle of equality. During career guidance activities, conditions and opportunities should be created for all school students to benefit from these activities. The school psychologist should guide every student in the school to participate in these activities with interest and enthusiasm, and no student should be left out of career guidance activities.
- Principle of integrity. Career guidance should also be open to young people who have left the pedagogical process at a certain stage of education. In general, specialists should also guide young people who have left education for certain reasons in line with their knowledge, skills, abilities and talents.

School psychologists and social workers should maintain constant contact with parents, ensure that they deeply understand the social essence of the issue of their children's career choice, and bring to the attention of parents that, in addition to their interests, they should also take into account their abilities and the professional needs of society when conducting career guidance work with their children. However, one aspect should not be forgotten here: sometimes giving too much importance to children's interests, inclinations and desires leads to a number of negative situations in the future. In this area, school psychologists should provide parents with the necessary assistance, provide them with the necessary information about the characteristics of any profession, the place this profession occupies in our society and the psychophysiological characteristics it requires from the employee, and inform them in this area. It is very important for the school psychologist to determine the professional interests of young people and share this information with the family. Naturally, it is very important to talk to parents who do not have sufficient knowledge in this area, to ensure that they take the necessary position in the choice of profession for their children and to help young people.

In terms of the issue of professional choice of young people at school, it is very important to continuously inform parents about the development levels, knowledge, skills, talents and abilities of their children, and to collect necessary information from them when necessary. These activities should be carried out by taking advantage of various psychological guidance methods, tools and approaches. It would be very effective to take advantage of the opportunities and opportunities of events such as parent meetings, "open door" days held at school, etc. The psychologist himself should organize psychological consultations and awareness-raising activities on this topic.

When necessary, school psychologists should make continuous speeches in the mass media in order to appeal to more parents and provide them with information on professional choice.

In order to help young people choose a profession, the help and support of the school principal in communicating with parents and the public is very important. He directly supervises and directs the implementation of professional choice activities, as well as many other activities at school. In this regard, it is very important for school principals to approach the professional choice of young people with special attention and responsibility.

It is also important to consider the temperament types of young people when guiding them towards any profession. We can basically analyze the characteristics of young people's temperament types and the professions that suit them as follows:

Choleric type - young people with this type are extremely impatient and enthusiastic. They have a high desire to realize their interests, stubbornness, and endurance. They tend to complete the work they have started to the end. Young people with this type tend to take on the most difficult, most energy-intensive tasks and are ambitious in performing these tasks. When faced with any problem, they do not lose themselves, they easily find a way out of the situation. Choleric types can work on one task for hours and get rid of fatigue faster. Monotonous life is not for them. They do not like to work on the same issue for a long time.

The most suitable professions for young people with the choleric type are mainly: television reporter (people of this profession collect information by conducting research on a new topic every day), director, actor, pilot, surgeon, builder, chef, investigator, entrepreneur, sales manager, project manager, etc.

Phlegmatics are calm and extremely cool-headed. They do not attach importance to failure. They start a task very slowly, but they complete it to the end. They are helpful and are able to look at any situation from the perspective of others and analyze it. Therefore, they can be good diplomats. They are very slow to change their habits and customs. Phlegmatics are very businesslike, tolerant and self-controlled. They have difficulty getting used to new people and have difficulty joining a conversation. They are extremely reserved. It is not easy to excite or anger them. Due to these characteristics, phlegmatics do not like stressful and exciting work conditions. Professions that require analytical thinking are more suitable for them. Working in the fields of economics, finance and scientific research is more suitable for them. Such young people can achieve success in professions related to accounting, editing literary texts, diplomacy, and agricultural work.

Sanguines have a lively reaction. Due to their high activity, they are very businesslike, immediately start new work, always try to be the first. It is important for sanguine people to follow the rules. They have fast movements, thoughts, speech. They can easily replace each other with feelings. They can easily communicate with people, easily switch from one job to another. They can quickly adapt to any conditions. Sedentary and monotonous work is not for them. Nothing around them goes unnoticed. They are interested in everything, and the objects of interest often change, are fleeting. Therefore, they quickly give up on the work they have started with enthusiasm.

They have good organizational skills and have great opportunities to succeed in management. Sanguines have innate leadership qualities. They strive to be in constant contact with more people. Sedentary professions are not suitable for them. Sanguines can be good teachers, managers, administrators, journalists, lawyers, engineers, and psychologists.

Melancholics have an extremely high sensitivity. They are deeply affected by a small action and do not forget it for a long time. Self-confidence is extremely low. They quickly get discouraged. Often they do not complete even the work that they are capable of. Stressful situations or criticism completely reduce their confidence in their own strength and can even cause them to become depressed. Their strongest qualities are diligence, strong observation and the ability to pay attention to details. Suitable professions for such people are working alone or with a computer. Melancholics should avoid choosing professions that require more communication. They are more successful in professions such as good artists or designers, writers, composers, programmers, architects, veterinarians, scientists, etc.

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SEXUAL ABUSE OF MENTALLY DISABLED PERSONS

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ABSTRACT

Child abuse encompasses all behaviors directed at a child by someone in their immediate environment, such as parents or other family members, caregivers, or any adult, which experts and society deem inappropriate and harmful. Generally, children suffer abuse in different ways. These include physical abuse, emotional-social abuse, and sexual abuse. Abuse is generally directed at all children. However, children with disabilities, especially those with intellectual disabilities, are more frequently abused. Therefore, families with intellectually disabled children need to be vigilant about sexual abuse directed at children, be aware of the signs that indicate abuse, and be aware of the devastating effects that such an incident will have on the child in order to protect their children in this regard. This study examines the risk of sexual abuse of individuals with intellectual disabilities from a multifaceted perspective. Individuals with intellectual disabilities are a group that is more vulnerable to sexual abuse due to cognitive limitations, communication difficulties, problems with self-expression, and social isolation. The aim of this article is to analyze in detail the causes of abuse, risk factors, protective and preventive mechanisms, the role of families and institutions, as well as scientific findings in national and international literature. A qualitative research method was used, and more than 30 scientific sources were examined. The findings show that the risk of sexual abuse for individuals with intellectual disabilities is high due to lack of education, inadequate family supervision, lack of social support, and weak institutional control mechanisms. However, protective education programs, increasing family awareness, and strengthening early reporting systems significantly reduce the risk of abuse.

Keywords: Individuals with intellectual disabilities; Sexual abuse; Child abuse; Social risk factors; Protective intervention; Educational programs

Introduction

Individuals with intellectual disabilities are considered to be at high risk of sexual abuse due to their developmental limitations. Because these individuals have limited abilities to assess their environment, defend themselves, and communicate, they are less likely to recognize, reject, or report abuse. Sexual abuse is not only physical harm but also a serious crime that causes long-term psychological, social, and behavioral trauma. International research shows that individuals with intellectual disabilities are 4–7 times more likely to experience sexual abuse than their peers. Therefore, the subject is of great importance both academically and socially. This article aims to examine sexual abuse in individuals with intellectual disabilities in a multidimensional way and to establish a scientific basis for protective interventions.

Children with intellectual disabilities often experience serious difficulties in understanding and retaining information. They cannot easily generalize from one situation to another, and therefore each topic must be taught separately, and special assistance is required to enable them to transfer the knowledge they have learned in one situation to another. For this reason, the sexual education of individuals with intellectual disabilities requires special attention. The sexual urges of individuals with intellectual disabilities can cause serious problems. However, with appropriate education at an early age, this problem can be minimized (Mermer, 1993). Individuals with intellectual disabilities can respond positively to the attention and affection offered to them. The judgment of individuals with intellectual disabilities is weak, and their reasoning abilities are limited. Therefore, they may silently and irrationally accept a proposal for sexual intercourse or sexual intimacy without knowing that they could be sexually exploited (Shindell 1975, Kempton 1972, Mermer 1993, Morgan 1987).

Today, many countries around the world have deterrent laws regarding child sexual abuse. These cover many issues, including the use of children as physical-sexual objects, pornographic displays, kissing or caressing children, etc. While all these issues are punishable by law separately, child sexual abuse is also determined by the age of consent. The age limit may vary from country to country. Generally, 14-18 years is accepted as the average age of consent. Although all sexual acts performed on children through coercion are considered sexual abuse, consensual sexual contact between children of similar ages is not considered abuse (Kutchinsky 1991, Kvam 2000).

Although there is no definitive link between mental disability and abuse, these children are considered to be at risk for abuse. Research on this subject indicates that one of the most significant types of abuse seen in individuals with intellectual disabilities is sexual abuse (Öner, Sucuoğlu 1994; Widom and Ames 1994; Fallon et al. 2002; Kvam 2000; Chamberlain et al. 1984). According to mythology, in ancient times, it was believed that sexual intercourse with disabled children was harmful, that these children were inadequate in terms of sexuality, and that

they were not sexually attractive. However, in later times, the realization that disabled children could be easily rendered helpless by the abuser placed these children in a high-risk category (Kvam 2000). Most people believe that children with moderate mental disabilities are at higher risk of sexual abuse. This is because children with mental disabilities often have serious difficulties in understanding and remembering things. Again, these children cannot easily generalize from one situation to another. They may interpret the closeness and attention offered to them as a sign of affection. Therefore, they may irrationally and silently accept a proposal for sexual intercourse or sexual intimacy without knowing that they could be sexually exploited (Shindell 1975, Kempton 1972, Mermer 1993, B.Ö.İ.R. 2005). Research indicates that mentally disabled males are more interested in sexuality than females (adults or adolescents) and that this interest increases with IQ in both sexes. Research findings also indicate that sexual deviance is more common among individuals with intellectual disabilities due to their quality of life, misguidance, sexual abuse, inability to find employment, inability to express themselves, and lack of adequate help with their problems, as well as their sexual urges and problems. Furthermore, studies have found that the rate of abuse among girls is between 12-17%, while among boys it is between 5-8%.

Objective

The main objective of this study is to identify risk factors for sexual abuse in individuals with intellectual disabilities, analyze the forms in which abuse occurs, and develop preventive strategies.

On the other hand, it comprehensively examines the individual, familial, and environmental factors that increase the risk of sexual abuse in children with intellectual disabilities. It is known that children with intellectual disabilities are more vulnerable to abuse due to reasons such as cognitive limitations, communication difficulties, inability to express themselves, lack of social awareness, and high dependence on caregivers. Accordingly, the aim of this study is to systematically identify risk factors and develop scientifically based recommendations for the protection of these children.

This study was also prepared to emphasize that sexual abuse of children with intellectual disabilities is a problem that is not sufficiently discussed in society and often remains hidden, and to identify gaps in this field by analyzing the existing body of knowledge in the literature. In addition, contributing to increasing the awareness levels of families, teachers, special education experts, and social service workers on the subject is among the important goals of the study.

Another objective of the study is to explain why privacy education, protective measures, and early intervention programs are of vital importance and to offer recommendations for developing children's abilities to recognize, express, and seek help regarding abuse. Thus, the aim is to create a scientific resource that can be used both in the academic field and by practitioners.

The sub-objectives of the research are as follows:

- To reveal the social, psychological, and environmental factors that lead to abuse in individuals with intellectual disabilities,
- To evaluate the role of families and institutions in abuse,
- To examine protective intervention models in the international literature,
- To analyze the impact of early awareness and safety education.

Importance

This research offers important contributions to both field experts and families. By explaining the reasons for the high risk of abuse on a scientific basis, the study assists in the development of educational content, internal policy regulations, and intervention programs aimed at raising family awareness. It also contributes to understanding the existing gaps in the protection of individuals with intellectual disabilities. This study is of great importance in terms of protecting children with intellectual disabilities from sexual abuse and raising awareness in this area. The literature frequently emphasizes that individuals with intellectual disabilities are at much higher risk of sexual abuse compared to their typically developing peers. However, this issue is often overlooked in society, and families, educators, and professionals are not sufficiently aware. In this context, the study is important from both a scientific and a social perspective.

From a scientific perspective, the study systematically reviews the existing literature to identify risk factors for sexual abuse of children with intellectual disabilities, protection mechanisms, and international practices. It thus contributes to identifying gaps in academic knowledge and guiding future research.

From a social perspective, the study aims to raise awareness among families, teachers, special educators, and social service professionals. This will enable the protection of children, the strengthening of early intervention mechanisms, and the dissemination of protective measures. Furthermore, by providing data and recommendations for policymakers and relevant institutions, the study establishes a scientific basis for enhancing the safety of children with intellectual disabilities.

Finally, the study is also valuable in terms of defending children's privacy rights and ensuring their development in a safe environment. The widespread implementation of protective programs and training will help raise awareness among both families and society and contribute to reducing abuse cases in the long term.

Theoretical Basis

The theoretical basis of this research is based on three main theories: Social Learning Theory, Attachment Theory, and the Behavioral Approach. Social Learning Theory emphasizes that abuse is mostly learned through observation and modeling. Attachment Theory states that individuals who experience insecure attachment are more vulnerable to external threats. According to the Behavioral Approach, communication limitations in individuals with mental disabilities increase the risk because they make it difficult to express abuse. This theoretical framework is important for understanding the causes of abuse and protective factors.

Various theoretical approaches and models are used to understand and analyze the risks of sexual abuse in children with intellectual disabilities. This study is based primarily on Social Learning Theory, Attachment Theory, the Risk-Safety Model, and Privacy Development Theory.

Social Learning Theory proposes that individuals learn behaviors through observation and modeling. In this context, children with intellectual disabilities may not recognize or correctly interpret negative behaviors they observe in their environment. This situation makes it difficult for them to develop awareness and resistance to abuse.

Attachment Theory focuses on the quality of the bond the child forms with the caregiver. Insecure or overly dependent attachment relationships contribute to the child becoming vulnerable to abuse. Children with intellectual disabilities, especially since they are highly dependent on their caregivers, are at increased risk of being manipulated by malicious individuals.

The Risk-Protection Model states that children's individual characteristics, environmental conditions, and lack of social support combine to increase the risk of abuse. Factors such as cognitive impairment, communication difficulties, and social isolation are highlighted as elements that threaten the safety of children with disabilities.

The Privacy Development Theory addresses children's understanding of their own bodies, boundaries, and personal space. Children with mental disabilities may not sufficiently internalize the concept of privacy developmentally, which increases their vulnerability to abuse.

This theoretical framework helps to understand risk factors at both the individual and social levels and provides a scientific basis for developing protective measures. When the analysis and interpretations provided by the theoretical basis are combined with literature reviews and recommendations for practice, a comprehensive perspective on protecting children with intellectual disabilities from sexual abuse is formed.

Literature Review

Studies in the literature reveal that individuals with intellectual disabilities are one of the groups most at risk for abuse. Research conducted in the US, Europe, and Turkey has identified the following risk factors: lack of communication, social isolation, history of domestic violence, lack of institutional oversight, low awareness, and lack of education. Furthermore, international studies show that safety education programs are extremely effective in preventing abuse. A significant decrease in abuse rates has been observed among individuals with disabilities who participate in these programs.

The risk of sexual abuse among children with intellectual disabilities has been extensively studied in international and national literature in recent years. Studies reveal that these children are exposed to sexual abuse at a much higher rate than their typically developing peers. For example, reports by the American Psychological Association (2020) and UNICEF indicate that the risk of sexual abuse for individuals with intellectual disabilities is 3 to 5 times higher.

Research emphasizes that abuse of children with intellectual disabilities is usually perpetrated by people close to them. These individuals include family members, caregivers, teachers, or neighbors, and the abuse often goes unnoticed for a long time. The literature shows that children are unable to express the abuse due to communication difficulties and cognitive limitations, and that most cases remain hidden.

National studies also present similar findings specific to Turkey. For example, one study found that most staff working in special education institutions did not have sufficient knowledge to recognize abuse, while families were not aware of privacy education and protective measures. This situation reveals the inadequacy of protective mechanisms and systematic risk factors.

The international literature also emphasizes the effectiveness of protective education programs. A significant reduction in abuse cases has been observed among children with intellectual disabilities who have received safety training. These programs focus on privacy awareness, communication skills development, and creating a safe environment.

Additionally, the literature review shows that raising the awareness of families, teachers, and social workers is critical in preventing abuse. The need for a multi-level approach to protect children is supported by policies and practices that aim to minimize risks at both the individual and institutional levels.

In conclusion, the literature review reveals that children with intellectual disabilities are at high risk of sexual abuse, that this risk stems from social, familial, and individual factors, and that the implementation of effective protective programs is of vital importance. This analysis ensures that the strategies proposed in other sections of the study are scientifically grounded.

Methodology

This article is based on qualitative research methods. A systematic literature review was conducted during the data collection process, evaluating international journals, scientific books, UNICEF and WHO reports, legal texts, and current statistics. The data were processed using thematic analysis, and four main categories were identified: risk factors, protective mechanisms, psychological effects, and the role of institutions. This study is a theoretical and literature-based research examining the issue of sexual abuse in children with mental disabilities. No field application, survey, interview, or experimental method was used in the study. The main objective of the research is to conduct a systematic literature review through existing academic studies, books, theses, and international reports.

Research Model

The study is built on a qualitative research model. Using the literature review method, the contents of previous scientific studies on the subject were analyzed, compared, and classified. This model allows for a comprehensive assessment of the risk factors for sexual abuse of children with intellectual disabilities.

Data Collection Process

Data were collected from academic databases (Scopus, Web of Science, PubMed, Google Scholar) and national publications. The keywords used in the search were: “children with intellectual disabilities,” “sexual abuse,” “risk factors,” “protective measures,” and “privacy education.” The literature collected was limited to the last 20 years and only peer-reviewed articles and reliable sources were selected.

Data Analysis

The contents of the collected studies were evaluated using the thematic analysis method. First, each study was summarized, then risk factors, protective strategies, and gaps in the literature were identified. The findings obtained as a result of the thematic analysis were linked to the “Theoretical Framework” and “Literature Review” sections, forming the scientific basis for the discussion and conclusion sections of the study.

Findings and Interpretations

The analysis revealed that sexual abuse of individuals with intellectual disabilities occurs for three main reasons: lack of education, weak family and institutional supervision, and social isolation. The data obtained show that safety training significantly reduces abuse. In addition, it was found that the rate of abuse decreased significantly in environments where family awareness was high. The findings are largely consistent with the results in the international literature.

Findings from the literature review reveal that children with intellectual disabilities are at high risk for sexual abuse. Analyses show that children's cognitive and communication limitations, lack of social awareness, and dependence on caregivers increase their vulnerability to abuse. Furthermore, it is understood that the majority of cases mentioned in the literature remain hidden and reporting rates are low.

Risk Factors

Cognitive Impairment: Children with intellectual disabilities have difficulty recognizing and understanding abuse. This makes them vulnerable to manipulation by abusers.

Lack of Communication: Children struggle to express their negative experiences. This delays the detection of incidents by families or institutions.

Social Isolation and Dependency: Most children with intellectual disabilities are highly dependent on caregivers and have limited social circles. These factors increase the likelihood of exposure to abuse.

Lack of Awareness: Families, educators, and social service professionals often lack sufficient knowledge about protecting children's privacy rights.

Findings Regarding Protective Measures

The literature emphasizes the effectiveness of protective education programs. Awareness of privacy, the development of communication skills, and the creation of safe environments increase children's capacity to protect themselves. Furthermore, raising awareness among families and teachers is critical for the early detection of abuse cases.

Comment

Analyses show that a multi-level approach is necessary to protect children with intellectual disabilities from sexual abuse. This approach should include raising awareness among children at the individual level, providing education at the family level, and strengthening supervision and support mechanisms at the institutional level. The findings in the literature offer concrete recommendations for practitioners and policymakers and provide a scientific basis for future research.

Conclusions and recommendations

This study shows that children with intellectual disabilities are at high risk of sexual abuse and that this risk stems from individual, familial, and social factors. The literature review reveals that children's cognitive limitations, communication difficulties, social isolation, and high dependence on caregivers create vulnerability to abuse. Furthermore, the fact that most cases of abuse remain hidden and reporting mechanisms are inadequate further emphasizes the importance of protective measures.

Recommendations

1. Family Education and Awareness: Families need to be educated about the privacy rights and safety of children with intellectual disabilities and the early signs of abuse. Seminars and guidance materials can increase families' awareness.

2. Programs for Educators and Professionals: Regular training programs should be organized for teachers, special educators, and social workers to strengthen their ability to recognize when children are at risk and intervene.

3. Privacy and Safety Education: Children should receive age-appropriate education on privacy and body awareness. This education will make it easier for children to express themselves and report abuse.

4. Institutional and Legal Measures: Control mechanisms in private educational institutions and care centers should be strengthened; clear protocols should be established to prevent cases of abuse. Furthermore, legal regulations and policies should be developed to ensure the protection of children with disabilities.

5. Recommendations for Future Research: Considering the gaps in the literature, it is important to conduct applicable and intervention-focused research in the future. In particular, ethical methods should be developed to enable children to recount their own experiences. In conclusion, protecting children with intellectual disabilities requires a multi-level and systematic approach. Steps taken at the individual, family, institutional, and societal levels will contribute to ensuring children's safety, protecting their rights, and raising social awareness. This study has created a resource that can guide both the academic literature and practitioners and policymakers.

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TECHNOLOGY ACCESS INEQUALITY IN ONLINE EDUCATION AND ITS EFFECTS ON LEARNING OUTCOMES: A REVIEW OF CONTEMPORARY EVIDENCE

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ABSTRACT

This article examines recent evidence on technology access inequality in online education and considers how uneven access to devices, internet connectivity, digital skills, and learning support can affect students' learning outcomes. The study is designed as a qualitative document analysis, drawing on peer-reviewed studies, academic books, and institutional reports that have shaped the discussion on the digital divide in education. It brings together earlier conceptual work on digital inequality with evidence produced during and after the rapid expansion of emergency remote teaching. The review shows that technology access inequality cannot be reduced to a simple question of whether a student owns a device or has an internet connection. It also involves the quality, stability, and independence of that access, students' confidence and digital skills, the design of online courses, and the support available from families, schools, and institutions. Across the literature, weaker access is linked with lower participation, less consistent engagement, slower feedback, fewer opportunities for interaction, and wider achievement gaps, especially for learners from low-income households, rural areas, and historically marginalized communities. However, the evidence also suggests that outcomes improve when access policies are supported by good teaching, teacher preparation, and inclusive platform design. The article concludes that online education may either widen or reduce educational inequality, depending on whether access is treated as a basic educational right rather than a technical extra. Recommendations are offered for schools, policymakers, and researchers who aim to build fairer online learning environments.

Keywords: digital divide, online education, learning outcomes, educational inequality, remote learning, access to technology, student engagement

Introduction

The expansion of online education has made technology access a basic condition for taking part in contemporary schooling. Once teaching, communication, assessment, and feedback move into digital spaces, students' chances to learn depend heavily on whether they have dependable devices, stable internet connections, and the practical skills needed to use them well. For this reason, the digital divide is no longer a side issue in educational technology. It has become one of the central questions in discussions of educational equity, both in ordinary schooling and in times of disruption (Selwyn, 2004; Warschauer, 2003).

In early public debates, the digital divide was often described in fairly simple terms: some people had computers and some did not. Later research made this picture more complex by showing that meaningful participation depends on much more than physical access. It also depends on the quality of access, how technology is used, the support available around the learner, and the ability to turn digital resources into real educational benefits (Robinson et al., 2015; van Deursen & van Dijk, 2019). In school settings, two students may both appear to be "connected," but their situations can be very different. One may work on a personal laptop with fast home broadband and adult support, while another may depend on a shared phone, unstable connectivity, and limited study space or guidance. These differences influence what students are able to do, how long they stay engaged, and how successfully they complete academic work.

The rapid shift to emergency remote teaching during the COVID-19 period brought these inequalities into sharper view. Research conducted during school closures showed that online learning could not be understood as a purely technological solution. Its success depended on family resources, school readiness, earlier digital experience, and the quality of online instruction (Engzell, Frey, & Verhagen, 2021; Ferri, Grifoni, & Guzzo, 2020). In many places, online education did more than reveal existing inequality; it deepened it by moving much of the burden of access from institutions to households. Differences in devices, bandwidth, digital skills, and home study conditions therefore became differences in attendance, engagement, assignment completion, and achievement.

Institutional and international reports have also warned against overly optimistic views of technology in education. OECD analyses indicate that broad access to computers does not automatically lead to better academic performance, particularly when digital tools are not carefully connected to pedagogy (OECD, 2015). UNESCO's 2023 Global Education Monitoring Report similarly argues that technology supports learning only under certain conditions, including relevance, inclusion, teacher preparation, and sound governance (UNESCO, 2023). These points are especially important for education systems that are trying to expand digital learning quickly while long-standing inequalities in infrastructure and support remain unresolved.

This article therefore addresses a focused question: how does technology access inequality influence learning outcomes in online education? To answer it, the article reviews foundational and recent literature and organizes the evidence around three areas: the main dimensions of technology access inequality, the ways in which access affects participation and achievement, and the policy implications for more equitable online education. Rather than presenting online learning as either automatically effective or automatically harmful, the article argues that its outcomes depend strongly on the material and social conditions surrounding access. These conditions need to be understood clearly if schools and policymakers want online education to strengthen, rather than weaken, educational justice.

Methodology

Research Design

This article uses a qualitative review design based on document analysis. This approach is suitable when a study aims to bring together conceptual arguments, empirical findings, and policy evidence from different sources in order to clarify a complex educational issue. Here, the issue is technology access inequality in online education. The review is not presented as a formal meta-analysis. Instead, it offers an interpretive synthesis of influential peer-reviewed articles, books, and institutional reports that help explain how access conditions shape learning outcomes.

Source Selection and Scope

The review focuses on sources that meet at least one of four criteria: (1) they offer a foundational account of the digital divide; (2) they examine access, infrastructure, or digital skills in relation to educational participation; (3) they report evidence on online learning effectiveness, engagement, or achievement; or (4) they provide policy guidance on educational technology and equity. Priority was given to highly cited and methodologically influential publications from recognized academic publishers, peer-reviewed journals, and major international institutions. The final selection includes books, journal articles, government reports, and international monitoring reports published between 2003 and 2023.

Analytical Procedure

The sources were read comparatively and coded around repeated themes connected with access, use, quality, support, and outcomes. During the analysis, attention was paid to whether each source defined access in a narrow technical sense or in a broader educational sense. The review also considered whether learning outcomes were discussed as participation, engagement, performance, or achievement, and whether inequality was located at the level of the individual, household, school, or wider system. A thematic synthesis was then used to connect the literature into a coherent explanation of how technology access inequality works in online education.

Trustworthiness

The credibility of the review was supported by drawing on several methodological traditions, including large-scale reports, conceptual studies, quantitative research, and review articles. Comparing evidence across these different sources helped reduce overreliance on any single type of publication. Since the article synthesizes established literature rather than reporting newly collected participant data, its trustworthiness depends mainly on source quality, interpretive transparency, and the consistency of findings across the reviewed studies.

Findings

The reviewed literature shows that technology access inequality in online education works through several connected dimensions. These dimensions are summarized in Table 1 and discussed in the following sections. One important pattern across the literature is that unequal learning outcomes rarely come from only one cause. They usually develop

from the combined effects of material access, digital skills, instructional conditions, and the wider socioeconomic context in which online learning takes place.

Table 1: Dimensions of technology access inequality in online education

Dimension	Description	Representative sources
Physical access	Availability of a usable device and a stable connection for required learning activities.	Warschauer (2003); van Deursen & van Dijk (2019)
Quality of access	Device type, bandwidth, data cost, reliability, and whether access is shared or independent.	OECD (2015); Ferri et al. (2020)
Digital skills	Ability to navigate platforms, manage files, solve basic technical problems, and use digital tools productively.	Robinson et al. (2015); van Deursen & van Dijk (2019)
Instructional access	Opportunity to enter and benefit from well-designed online lessons, feedback, and assessment.	Sun et al. (2008); UNESCO (2023)
Support access	Availability of teacher guidance, family help, peer contact, and school-level assistance.	Jæger & Blaabæk (2020); Azionya & Nhedzi (2021)

Table 1 shows that the digital divide in education has moved beyond a first-generation problem of basic access and has become a more layered and relational issue. Early work by Warschauer (2003) and Selwyn (2004) had already questioned the idea that simply providing devices would solve educational exclusion. More recent studies show that even where physical connectivity is common, inequalities remain in the quality of access, the independence of use, and students' ability to benefit from digital learning opportunities (van Deursen & van Dijk, 2019; Robinson et al., 2015).

The first dimension is material and infrastructural access. Students' participation in online learning depends not only on having a device, but also on what kind of device it is, how many people share it, whether it can run required software, and whether the connection can support live lessons, video feedback, and multimedia tasks. Hohlfeld et al. (2008) showed that school-level socioeconomic status influences patterns of technology integration. Later research during emergency remote teaching showed that these inequalities also enter the home, where shared devices, limited bandwidth, and expensive data plans can reduce attendance and task completion (Ferri et al., 2020; Azionya & Nhedzi, 2021).

The second dimension involves digital skills and confidence. Online learning asks students to find information, manage files, understand instructions, move around learning platforms, and communicate through digital tools. These skills are not distributed evenly. They are often shaped by earlier experience, educational background, and family support. Van Deursen and van Dijk (2019) show that access inequality increasingly involves differences in material quality and skills. In educational settings, students with similar connectivity can still have very different experiences: one may troubleshoot problems, follow deadlines, and complete digital tasks independently, while another may struggle with the same steps. The result can be slower progress, weaker engagement, and lower persistence.

The third dimension is the learning environment itself. Online education is shaped by course design, teacher presence, the speed of feedback, and the clarity of expectations. OECD (2015) and UNESCO (2023) both caution that technology use does not guarantee learning gains. When platforms are confusing, lessons depend too much on passive content delivery, or feedback arrives late, limited access becomes even more damaging. Students who already face technological barriers are usually least able to compensate for weak instructional design. By contrast, clear task structure and flexible access routes can reduce some of the pressure created by access constraints.

The fourth dimension is social and institutional support. In face-to-face schooling, students can often turn to school facilities, peers, and teachers for immediate help. In online contexts, much of this support has to be recreated digitally or replaced by resources available at home. Jæger and Blaabæk (2020) show that learning-opportunity gaps widened during pandemic disruptions because better-resourced families were more able to support children's educational activity. Similar findings appear in studies of remote schooling and higher education, where socioeconomic

disadvantage affected students' ability to attend live sessions, complete assignments, and maintain academic routines (Golden et al., 2023; Azionya & Nhedzi, 2021).

The effects of these inequalities on learning outcomes are summarized in Table 2. The evidence suggests that access inequality works through both direct and indirect pathways. Direct effects include missed classes, late or incomplete assignment submission, interrupted assessment participation, and reduced exposure to instructional content. Indirect effects include lower motivation, cognitive overload caused by technical frustration, less frequent interaction, and weaker self-regulation. Panigrahi, Srivastava, and Panigrahi (2021) found that engagement mediates perceived learning effectiveness, which suggests that access problems can reduce achievement partly by weakening the conditions needed for sustained engagement.

Table 2: Common effects of access inequality on learning processes and outcomes

Outcome area	Observed effect in the literature	Illustrative evidence
Attendance and participation	Lower login rates, missed live sessions, and interrupted class participation.	Ferri et al. (2020); Azionya & Nhedzi (2021)
Engagement	Reduced persistence and weaker participation when technology problems create frustration.	Panigrahi et al. (2021); Sun et al. (2008)
Assignment completion	Late or incomplete work linked to device sharing, data limits, and unstable connections.	UNESCO (2023); Golden & Srisarajivakul (2023)
Assessment opportunity	Unequal chances to complete quizzes, upload work, or receive timely feedback.	OECD (2015); UNESCO (2023)
Achievement	Learning loss and wider performance gaps among disadvantaged learners when access is disrupted.	Engzell et al. (2021); Jæger & Blaabæk (2020)

Studies of learning loss provide particularly strong evidence of the relationship between disrupted access and educational outcomes. Engzell et al. (2021) reported measurable learning loss during school closures and found that the losses were larger for students from disadvantaged homes. This finding matters because it shows that unequal outcomes are not only a matter of perception or satisfaction; they can be seen in academic progress itself. The literature does not support the simple claim that online learning always lowers performance. Rather, it indicates that when access is unequal, online learning is more likely to harm students who already face educational disadvantage.

The reviewed evidence also shows that access inequality affects students' time. Learners with weaker access often spend more time solving technical problems, waiting for files to load, or searching for another connection. This leaves less time for reading, writing, revision, and reflection. In this sense, inequality in online education is also inequality in time-on-task. Sun et al. (2008) emphasize the role of system quality, course design, and learner-computer interaction in e-learning satisfaction. When systems fail or require high-bandwidth participation, students with fragile access fall behind not because of lower ability, but because digital friction takes up their study time and attention.

Assessment is another repeated concern in the literature. In online settings, quizzes, projects, participation activities, and feedback are often handled through platforms that assume stable access. Students with intermittent connectivity or limited devices may miss quizzes, upload incomplete work, or avoid interactive tasks that count toward assessment. The issue is therefore not only unequal exposure to learning, but also unequal exposure to evaluation. Table 3 brings together the main mechanisms linking access inequality to participation, engagement, and achievement. These mechanisms show that technology access is closely tied to pedagogical fairness.

Table 3: Mechanisms linking technology inequality to learning outcomes

Mechanism	Educational consequence	Explanation
Interrupted exposure	Lower content coverage	Students miss lessons, demonstrations, explanations, and feedback cycles.
Digital friction	Reduced time-on-task	More effort is spent logging in, downloading files, troubleshooting, and reconnecting.

Weaker interaction	Limited clarification and dialogue	Students have fewer chances to ask questions and receive immediate support.
Assessment instability	Lower validity and fairness	Performance becomes partly dependent on technical conditions rather than learning alone.
Cumulative disadvantage	Widening gaps over time	Repeated small access barriers reduce participation and widen gaps over time.

The literature also points to practical responses. Table 4 suggests that the most useful responses are multi-level rather than only technical. Device distribution, subsidized internet, and school-based infrastructure are necessary, but they are not enough by themselves. Effective policy also needs teacher professional development, usable platforms, flexible assessment strategies, offline or low-bandwidth options, and targeted support for families and communities. UNESCO (2023) argues that technology should be adopted on educational terms rather than market terms, while OECD (2015) stresses that meaningful learning gains require careful pedagogical integration. Taken together, these findings suggest that equitable online learning depends on access, design, support, and institutional responsibility working together.

Table 4: Policy directions for more equitable online education

Policy area	Recommended response	Supporting rationale
Devices and connectivity	Guarantee minimum device and internet access for all students.	Material access remains a precondition for participation.
Platform design	Use low-bandwidth, mobile-friendly, and accessible learning environments.	Quality of design can reduce the burden of weak access.
Teacher preparation	Train teachers in inclusive online pedagogy and flexible assessment.	Pedagogy mediates whether technology helps or excludes.
Monitoring	Track engagement, absences, and submission barriers in real time.	Early detection prevents hidden access problems from becoming failure.
Community partnership	Work with families and local organizations to extend support beyond school.	Educational access in online learning often depends on home conditions.

Discussion

The reviewed studies support a broad understanding of technology access inequality. Access is best understood as an educational ecology that includes infrastructure, devices, skills, guidance, and institutional design. This view moves beyond a hardware-centered understanding of the digital divide and helps explain why equal ownership rates do not automatically produce equal learning outcomes. In line with Warschauer (2003), the evidence suggests that meaningful inclusion depends on whether learners can use digital tools to take part in valued social and academic practices. The problem, then, is not just technological scarcity. It is unequal access to educationally meaningful digital participation. The literature also explains why online education can appear to produce mixed results. Meta-analytic and large-scale evidence shows that online and blended learning can be effective under suitable conditions (Means et al., 2010). At the same time, the same field of research shows that effectiveness is not evenly distributed when access conditions are unequal. This helps resolve a common tension in the literature: online learning may be pedagogically promising in general, while still being inequitable in practice. The difference lies in implementation. When access is stable, support is strong, and course design is inclusive, online learning can increase flexibility and engagement. When access is fragile and support is weak, it can magnify disadvantage.

The findings also suggest that educational inequality in digital contexts is cumulative. Students who lack adequate devices often also lack quiet study space, adult support, prior digital literacy, and institutional flexibility. These disadvantages build on one another. As Robinson et al. (2015) argue, digital inequality intersects with broader social inequalities rather than standing apart from them. In education, this means that access policies cannot be separated from issues such as poverty, rurality, disability support, language background, or school funding.

A further implication concerns responsibility. Discussions of online learning often place the burden of adaptation on individual learners, who are expected to be resilient, self-regulated, and digitally capable. The literature reviewed here suggests that this expectation can hide structural inequities. When a learner cannot participate because of a shared

device, unstable connectivity, or poor platform design, the problem should not be treated as personal failure. It should be understood as a weakness in educational provision. This is why UNESCO (2023) and OECD (2015) both emphasize governance, design, and system-level planning rather than simply encouraging more technology use.

Finally, the literature suggests that future online education policy should move beyond emergency substitution and focus on resilient inclusion. Emergency remote teaching made access inequalities highly visible, but the issue remains important after crisis conditions pass. As blended, hybrid, and platform-based learning become normal parts of education, long-standing divides in access and support will continue to shape who benefits most from digital environments. Schools that want to use online education equitably need to plan for differentiated access from the beginning, rather than treating inequity as a problem to fix later.

Results And Conclusions

This review shows that technology access inequality is a decisive factor in online education and a major condition shaping whether digital learning environments widen or reduce educational inequality. The literature consistently suggests that access needs to be understood in layers. Material resources, bandwidth, device quality, digital skills, instructional design, and social support all influence whether students can participate and succeed. Narrow definitions of access underestimate the problem and can lead to policy responses that look useful on paper but fail to address students' actual learning conditions.

The evidence also shows that unequal access affects learning outcomes through several pathways. Students with weaker access are more likely to miss instruction, receive feedback late, struggle to take part in assessment, and show lower engagement. Over time, these participation problems can accumulate into performance gaps. Evidence from learning-loss studies, school-level technology research, and policy reports supports the conclusion that online education can intensify pre-existing inequality when access is left mainly to household circumstances.

At the same time, the literature does not justify a pessimistic conclusion that online learning is automatically inequitable. It suggests instead that fairer outcomes are possible when education systems combine infrastructure investment with strong pedagogy, accessible platforms, teacher preparation, flexible participation routes, and targeted support for vulnerable learners. The central lesson is conditional: online education is only as equitable as the access structures and support systems on which it depends.

Recommendations

Practical Recommendations

1. Educational authorities should define digital access as a minimum educational entitlement. This should include an adequate device, reliable connectivity, and access to essential platforms and learning materials for every student.
2. Schools should design online and blended courses with more than one route for participation, including low-bandwidth options, downloadable materials, asynchronous pathways, and flexible deadlines when access conditions justify them.
3. Teacher professional development should include technical training, but it should also cover inclusive online pedagogy, fair assessment practices, and early identification of students affected by access barriers.
4. Institutions should collect ongoing data on attendance, platform use, assignment submission, and student feedback so that hidden access problems can be identified before they become long-term academic losses.
5. Partnerships with families and local communities should be strengthened so that access support extends beyond school walls, especially in rural and socioeconomically disadvantaged settings.

Recommendations for Future Research

1. More longitudinal studies are needed to examine how repeated exposure to unequal online access shapes achievement over several years, rather than only during a single emergency period.
2. Future research should examine how device quality, shared use, and data affordability interact with motivation, self-regulation, and teacher feedback across different age groups.
3. Comparative studies across countries and school systems would help clarify which combinations of policy measures are most effective in reducing digital inequality in online and blended learning.
4. Researchers should give greater attention to intersectional forms of disadvantage, including disability, language background, rurality, migration status, and school sector.
5. More classroom-level research is needed on how teachers adapt course design for learners with constrained access while still maintaining academic expectations.

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THE EFFECT OF AI-SUPPORTED CORPORATE COMMUNICATION ON STRATEGIC DECISION-MAKING QUALITY IN BUSINESSES: THE MEDIATING ROLE OF DIGITAL TRUST AND THE MODERATING EFFECT OF DATA LITERACY

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ABSTRACT

The rapid advancement of artificial intelligence (AI) technologies has significantly transformed organizational communication and strategic management practices. AI-supported corporate communication enables organizations to improve information quality, accelerate communication processes, and support evidence-based managerial decision-making. Despite the increasing adoption of AI technologies, limited empirical research has examined how AI-supported corporate communication influences strategic decision-making quality, particularly within the context of the Turkish Republic of Northern Cyprus (TRNC). Therefore, this study investigates the effect of AI-supported corporate communication on strategic decision-making quality while examining the mediating role of digital trust and the moderating effect of data literacy. A quantitative research design based on the relational survey model was employed. Data were collected from 412 managers and white-collar employees working in private-sector organizations located in Nicosia and Famagusta, the two largest commercial centers of the TRNC. The research model was tested using IBM SPSS Statistics 28.0 and AMOS 24.0. Descriptive statistics, independent samples t-test, one-way ANOVA, Pearson correlation analysis, multiple regression analysis, confirmatory factor analysis (CFA), structural equation modeling (SEM), bootstrapping mediation analysis, and moderation analysis were performed. The findings revealed that AI-supported corporate communication has a significant positive effect on strategic decision-making quality. Furthermore, AI-supported corporate communication significantly enhances digital trust, while digital trust positively influences strategic decision-making quality and partially mediates this relationship. The results also demonstrated that data literacy significantly moderates the relationship between AI-supported corporate communication and strategic decision-making quality. Employees with higher levels of data literacy benefit more from AI-supported communication systems than those with lower levels of data literacy.

The study contributes to the literature by integrating communication management, artificial intelligence, strategic management, and information systems into a comprehensive conceptual model. From a practical perspective, the findings suggest that organizations should strengthen AI-supported communication practices, improve digital trust, and invest in employees' data literacy to enhance strategic decision-making quality and achieve sustainable competitive advantage.

Keywords: Artificial Intelligence, AI-Supported Corporate Communication, Strategic Decision-Making Quality, Digital Trust, Data Literacy, Organizational Communication, Digital Transformation.

1. Introduction

The rapid advancement of artificial intelligence (AI) technologies has significantly transformed organizational communication and managerial decision-making processes. AI-powered communication systems are no longer limited to automating routine tasks; instead, they have become strategic tools that support information management, stakeholder communication, knowledge sharing, and executive decision-making. Organizations increasingly employ AI technologies such as generative artificial intelligence, intelligent communication platforms, predictive analytics, and decision support systems to improve communication efficiency and enhance strategic management capabilities (Dwivedi et al., 2023; Huang & Rust, 2022).

Strategic decision-making quality has become one of the most critical determinants of organizational success in today's highly competitive and digitally connected business environment. Managers are expected to make accurate, timely,

and evidence-based decisions while processing large volumes of information originating from multiple internal and external sources. Artificial intelligence-supported corporate communication enables organizations to analyze real-time data, facilitate knowledge exchange, reduce communication barriers, and provide decision-makers with accurate and relevant information. Consequently, organizations utilizing AI-supported communication systems are more likely to improve strategic decision quality and organizational performance (Brynjolfsson & McAfee, 2017; Shrestha, Ben-Menahem, & von Krogh, 2019; Jarrahi, 2018).

Recent developments in generative artificial intelligence have further strengthened the role of AI in corporate communication. Applications such as intelligent virtual assistants, AI-generated reports, automated internal communication systems, predictive communication analytics, and conversational AI platforms allow organizations to improve communication speed, consistency, and information accessibility. Rather than replacing managerial expertise, these technologies increasingly function as collaborative partners that support strategic thinking, organizational learning, and evidence-based decision-making (Dwivedi et al., 2023; Dellermann et al., 2019; Rai, Constantinides, & Sarker, 2019).

However, the successful implementation of AI-supported corporate communication depends not only on technological capabilities but also on employees' and managers' willingness to trust AI-generated information. Digital trust has therefore emerged as one of the most influential determinants of artificial intelligence adoption in organizational environments. Digital trust refers to individuals' confidence in the reliability, transparency, security, and ethical use of digital technologies. Organizations characterized by higher levels of digital trust are more likely to utilize AI-generated information during strategic decision-making processes and achieve higher decision quality (Glikson & Woolley, 2020; Choung, David, & Ross, 2023; Shin, 2021).

Another important organizational capability influencing AI effectiveness is data literacy. Data literacy refers to the ability of managers and employees to understand, interpret, evaluate, and effectively utilize data in organizational decision-making. Even the most advanced AI communication systems cannot generate organizational value unless users possess sufficient competencies to interpret AI-generated outputs accurately. Therefore, organizations with higher levels of data literacy are expected to benefit more from AI-supported communication systems than organizations with limited analytical capabilities (Mandinach & Gummer, 2016; Gartner, 2024; Wang, Myers, & Sundaram, 2024).

Within the Turkish Republic of Northern Cyprus (TRNC), businesses have increasingly accelerated their digital transformation initiatives over recent years. Particularly in sectors such as higher education, tourism, banking, retail, healthcare, and professional services, organizations have begun integrating artificial intelligence into internal communication, customer communication, and managerial decision-making processes. Despite these developments, empirical research examining the influence of AI-supported corporate communication on strategic decision-making quality within the TRNC context remains limited. Furthermore, the roles of digital trust and data literacy in explaining this relationship have received little empirical attention.

Accordingly, this study investigates the effect of AI-supported corporate communication on strategic decision-making quality among businesses operating in the Turkish Republic of Northern Cyprus. The research was designed to collect data from managers and white-collar employees working in organizations located in Nicosia and Famagusta, the country's two largest commercial and administrative centers. Additionally, the study examines the mediating role of digital trust and the moderating effect of data literacy in explaining the relationship between AI-supported corporate communication and strategic decision-making quality.

By integrating perspectives from communication management, strategic management, information systems, artificial intelligence, and organizational behavior, this study contributes to the growing literature on AI-driven organizational transformation. Moreover, the findings are expected to provide practical recommendations for organizations seeking to improve strategic decision-making quality through the effective implementation of AI-supported corporate communication systems.

Purpose and Significance of the Study

1.1. Purpose of the Study

The primary purpose of this study is to examine the effect of AI-supported corporate communication on the quality of strategic decision-making in businesses operating in the Turkish Republic of Northern Cyprus (TRNC). The research was conducted among managers and white-collar employees working in organizations located in Nicosia and Famagusta, the two largest commercial and administrative centers of the country. As organizations increasingly integrate artificial intelligence into communication and decision-support processes, understanding its contribution to managerial decision quality has become a significant research priority (Dwivedi et al., 2023; Huang & Rust, 2022).

More specifically, this study aims to determine whether AI-supported corporate communication improves the quality of strategic decision-making by enabling organizations to communicate more effectively, process information more efficiently, and support evidence-based managerial decisions. In addition, the study investigates the mediating role of

digital trust in explaining this relationship. Digital trust is expected to increase managers' willingness to rely on AI-generated information during strategic decision-making processes (Glikson & Woolley, 2020; Shin, 2021).

Furthermore, the study examines the moderating effect of data literacy. Organizations with higher levels of data literacy are expected to interpret AI-generated outputs more accurately and transform digital information into higher-quality strategic decisions. Therefore, the research seeks to determine whether data literacy strengthens the relationship between AI-supported corporate communication and strategic decision-making quality (Mandinach & Gummer, 2016; Wang, Myers, & Sundaram, 2024).

Ultimately, the study aims to provide a comprehensive model explaining how AI-supported corporate communication contributes to strategic decision-making quality and under which organizational conditions this contribution becomes stronger. The findings are expected to provide both theoretical contributions and practical recommendations for organizations undergoing digital transformation.

1.2. Significance of the Study

Artificial intelligence has become one of the most influential technologies shaping organizational communication and strategic management practices. While previous studies have primarily focused on AI adoption, organizational performance, or technology acceptance, relatively limited attention has been devoted to understanding how AI-supported corporate communication influences the quality of strategic decision-making. Therefore, this study contributes to the literature by integrating communication management, strategic management, information systems, and artificial intelligence into a single conceptual framework (Shrestha, Ben-Menahem, & von Krogh, 2019; Dwivedi et al., 2023).

The study is also significant because it introduces digital trust as a mediating variable. Although trust has been widely recognized as a prerequisite for artificial intelligence adoption, empirical studies examining its role within AI-supported corporate communication remain limited. By investigating digital trust, the study explains one of the psychological mechanisms through which AI-generated communication contributes to better strategic decisions (Glikson & Woolley, 2020; Choung, David, & Ross, 2023).

Another important contribution of the study is the inclusion of data literacy as a moderating variable. As organizations increasingly rely on AI-generated information, managers' ability to interpret, evaluate, and effectively utilize data has become a critical organizational capability. The findings are expected to demonstrate that organizations possessing higher levels of data literacy benefit more from AI-supported communication systems than organizations with limited analytical competencies (Mandinach & Gummer, 2016; Gartner, 2024).

The study further contributes to the limited empirical literature concerning artificial intelligence applications within the Turkish Republic of Northern Cyprus. By collecting data from businesses operating in Nicosia and Famagusta, the research provides evidence from a developing digital economy where AI-supported communication technologies are increasingly being adopted across sectors such as higher education, tourism, banking, healthcare, and retail. Consequently, the findings expand the international literature by incorporating a regional context that has received relatively little scholarly attention.

Finally, the findings are expected to provide practical implications for business managers, communication professionals, digital transformation leaders, and policymakers. Understanding how AI-supported corporate communication, digital trust, and data literacy jointly influence strategic decision-making quality may help organizations design more effective communication strategies, strengthen managerial decision processes, improve organizational performance, and achieve sustainable competitive advantage in increasingly digital business environments (Brynjolfsson & McAfee, 2017; Huang & Rust, 2022; Dwivedi et al., 2023).

1.3. Research Hypotheses

H1: AI-supported corporate communication has a positive and significant effect on strategic decision-making quality.

H2: AI-supported corporate communication has a positive and significant effect on digital trust.

H3: Digital trust has a positive and significant effect on strategic decision-making quality.

H4: Digital trust mediates the relationship between AI-supported corporate communication and strategic decision-making quality.

H5: Data literacy moderates the relationship between AI-supported corporate communication and strategic decision-making quality.

H5a: The positive effect of AI-supported corporate communication on strategic decision-making quality is stronger among employees with high levels of data literacy.

H5b: The positive effect of AI-supported corporate communication on strategic decision-making quality is weaker among employees with low levels of data literacy.

Theoretical Framework

2.1. AI-Supported Corporate Communication

Artificial intelligence (AI) has become one of the most transformative technologies influencing corporate communication in the digital era. Organizations increasingly utilize AI-powered communication systems to automate routine communication processes, support information exchange, facilitate stakeholder engagement, and improve managerial decision-making. Unlike traditional communication technologies, AI-supported corporate communication systems analyze large volumes of structured and unstructured data, generate real-time insights, personalize communication content, and assist managers in interpreting organizational information. Consequently, AI has evolved from a communication support tool into a strategic organizational capability that enhances communication quality and organizational effectiveness (Dwivedi et al., 2023; Huang & Rust, 2022).

Recent developments in generative artificial intelligence have significantly expanded the scope of corporate communication. Large language models, intelligent virtual assistants, predictive communication systems, and AI-supported content generation platforms enable organizations to improve internal communication, customer communication, crisis communication, and strategic communication simultaneously. These technologies facilitate faster information processing, reduce communication barriers, improve message consistency, and strengthen organizational responsiveness. Accordingly, AI-supported corporate communication has become an essential component of digital transformation strategies across both public and private organizations (Korzynski, Mazurek, Altmann, & Ejdy, 2023; Dwivedi et al., 2023).

From a strategic management perspective, AI-supported corporate communication contributes to organizational competitiveness by improving information quality and communication efficiency. Artificial intelligence enables managers to access relevant information more rapidly, identify emerging environmental trends, and respond more effectively to dynamic business conditions. Rather than replacing managerial expertise, AI functions as a collaborative partner that enhances analytical reasoning, supports evidence-based communication, and facilitates strategic knowledge sharing throughout organizations. Consequently, AI-supported communication contributes to both operational efficiency and strategic organizational performance (Jarrahi, 2018; Dellermann, Ebel, Söllner, & Leimeister, 2019).

Organizations operating in digitally intensive industries increasingly integrate AI into communication activities such as employee communication, customer relationship management, corporate reputation management, knowledge management, and stakeholder engagement. Research indicates that organizations successfully implementing AI-supported communication systems experience higher organizational agility, stronger communication effectiveness, and improved decision quality compared with organizations relying solely on conventional communication practices. These findings suggest that AI-supported communication has become a strategic organizational resource rather than merely a technological innovation (Raisch & Krakowski, 2021; Verhoef et al., 2021).

Although the adoption of AI-supported communication continues to accelerate globally, successful implementation requires organizational readiness, technological infrastructure, employee competencies, and managerial support. Organizations capable of integrating artificial intelligence into their communication processes are expected to strengthen organizational learning, improve strategic decision-making, and sustain long-term competitive advantage within increasingly digital business environments (Brynjolfsson & McAfee, 2017; Huang & Rust, 2022). Artificial intelligence (AI) has become one of the most influential technologies transforming corporate communication in the digital economy. Unlike traditional communication technologies, AI-supported corporate communication enables organizations to automate communication processes, analyze large volumes of data, generate intelligent insights, personalize communication strategies, and facilitate real-time interactions with both internal and external stakeholders. Consequently, AI is increasingly viewed not merely as a technological innovation but as a strategic communication capability that enhances organizational effectiveness and competitiveness (Dwivedi et al., 2023; Huang & Rust, 2022). Corporate communication has traditionally focused on ensuring effective information exchange among employees, managers, customers, suppliers, investors, government institutions, and other stakeholders. However, digital transformation has substantially changed communication structures, requiring organizations to process information more rapidly, respond to environmental changes more efficiently, and support managerial decision-making through intelligent communication systems. AI technologies provide organizations with advanced capabilities such as natural language processing, predictive analytics, conversational AI, machine learning, and intelligent content generation, enabling more responsive and data-driven communication processes (Korzynski et al., 2023; Verhoef et al., 2021).

The emergence of generative artificial intelligence has further expanded the role of AI in organizational communication. Large Language Models (LLMs), including ChatGPT, Gemini, Claude, and Microsoft Copilot, have enabled organizations to automate report generation, summarize business information, prepare strategic documents, manage customer inquiries, and support executive communication. These technologies significantly reduce

communication costs while increasing communication accuracy, speed, and consistency across organizational departments (Dwivedi et al., 2023; Feuerriegel et al., 2024).

From a managerial perspective, AI-supported corporate communication enhances organizational intelligence by facilitating evidence-based decision-making. AI systems continuously analyze internal and external organizational data, identify emerging business trends, evaluate potential risks, and provide managers with timely recommendations. Consequently, managers spend less time processing routine information and more time focusing on strategic analysis and organizational innovation. Rather than replacing managerial judgment, AI augments human decision-making capabilities by providing richer information and more comprehensive analyses (Jarrahi, 2018; Dellermann et al., 2019). The integration of AI into corporate communication also contributes to organizational agility. Agile organizations require rapid communication, continuous information sharing, and coordinated decision-making across departments. AI-powered communication platforms enable organizations to monitor organizational performance in real time, distribute information simultaneously, predict stakeholder expectations, and improve organizational responsiveness. These capabilities strengthen organizational resilience and support sustainable competitive advantage in highly dynamic business environments (Raisch & Krakowski, 2021; Brynjolfsson & McAfee, 2017).

Another significant contribution of AI-supported communication concerns knowledge management. Organizations generate enormous amounts of organizational knowledge every day through emails, reports, meetings, customer interactions, and operational activities. AI systems facilitate knowledge acquisition, classification, storage, retrieval, and dissemination, enabling organizations to transform information into organizational knowledge more efficiently. Effective knowledge management supports organizational learning, improves collaboration among employees, and enhances managerial decision quality (Santoro et al., 2021; Nonaka & Takeuchi, 1995).

AI-supported corporate communication also plays a central role in internal communication management. Intelligent communication platforms personalize organizational messages, recommend relevant information to employees, automate routine communication tasks, and improve collaboration among teams. Employees receive more accurate information, communication delays are minimized, and organizational transparency increases. As a result, organizations experience stronger employee engagement, improved communication satisfaction, and higher organizational commitment (Men & Yue, 2019; Korzynski et al., 2023).

Customer communication has similarly undergone substantial transformation through artificial intelligence. AI-powered chatbots, virtual assistants, recommendation systems, and predictive communication platforms provide organizations with continuous customer support, personalized communication experiences, and rapid responses to customer inquiries. Organizations utilizing AI-supported customer communication report improvements in customer satisfaction, relationship quality, service efficiency, and brand reputation. Consequently, AI has become an essential component of customer relationship management strategies (Huang & Rust, 2022; Davenport, Guha, Grewal, & Bressgott, 2020).

Despite its numerous advantages, AI-supported corporate communication also introduces managerial challenges. Issues related to algorithmic transparency, privacy protection, ethical decision-making, misinformation, cybersecurity, and employee acceptance continue to influence organizational adoption of AI technologies. Managers must therefore develop governance mechanisms that ensure responsible AI implementation while maintaining organizational trust and communication quality. Ethical AI governance is increasingly recognized as a prerequisite for successful organizational digital transformation (Glikson & Woolley, 2020; Floridi & Cows, 2022).

Recent empirical studies demonstrate that organizations successfully integrating AI into corporate communication achieve higher organizational performance, stronger innovation capability, improved communication effectiveness, and superior strategic decision quality. These organizations are more capable of adapting to rapidly changing market conditions, utilizing organizational knowledge effectively, and maintaining sustainable competitive advantages. Consequently, AI-supported corporate communication is increasingly regarded as a strategic organizational capability that extends far beyond technological automation and contributes directly to long-term organizational success (Verhoef et al., 2021; Feuerriegel et al., 2024).

Considering these theoretical perspectives, AI-supported corporate communication constitutes the fundamental independent variable of the present study. The current research proposes that organizations utilizing AI-supported communication systems more effectively are likely to improve strategic decision-making quality by increasing communication efficiency, strengthening organizational knowledge management, enhancing digital trust, and supporting evidence-based managerial decision processes.

3. Method

3.1. Research Model

This study employed a quantitative research design using a relational survey model to examine the effect of AI-supported corporate communication on strategic decision-making quality. In addition to investigating the direct

relationship between these variables, the study evaluated the mediating role of digital trust and the moderating effect of data literacy.

The conceptual model consists of one independent variable (AI-supported corporate communication), one dependent variable (strategic decision-making quality), one mediating variable (digital trust), and one moderating variable (data literacy). The proposed model assumes that AI-supported corporate communication positively influences strategic decision-making quality both directly and indirectly through digital trust, while the strength of this relationship varies according to employees' levels of data literacy.

Structural Equation Modeling (SEM) was employed to test the proposed hypotheses. The mediating effect of digital trust was examined using the bootstrapping method, whereas the moderating effect of data literacy was tested through interaction analysis.

3.2. Population and Sample

The population of this research consisted of employees working in private-sector businesses operating in the Turkish Republic of Northern Cyprus (TRNC). Considering the widespread adoption of artificial intelligence technologies in organizational communication, businesses located in Nicosia and Famagusta, the country's two largest commercial centers, were selected as the research setting. A simple random sampling technique was employed to select participants. Employees from various sectors, including banking, tourism, education, healthcare, retail, information technology, manufacturing, and professional services, were invited to participate in the study. A total of 412 valid questionnaires were obtained and included in the statistical analyses. The sample consisted of employees with different demographic characteristics, including gender, age, education level, work experience, managerial position, and industry sector, allowing the findings to be generalized across multiple organizational contexts within the TRNC.

3.3. Data Collection Instruments

The data were collected using a structured questionnaire consisting of five sections. The first section included demographic questions measuring participants' gender, age, educational level, organizational tenure, managerial position, and sector. The second section measured AI-Supported Corporate Communication using an adapted scale developed from previous studies on artificial intelligence adoption and organizational communication. The scale consisted of 10 items measured on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The third section measured Digital Trust using a 7-item scale adapted from previous studies investigating trust in artificial intelligence and digital technologies. The fourth section measured Data Literacy through an 8-item scale evaluating employees' ability to understand, interpret, analyze, and utilize organizational data in managerial decision-making. The final section measured Strategic Decision-Making Quality using a 10-item scale assessing information quality, decision effectiveness, analytical capability, decision accuracy, and strategic responsiveness.

All measurement scales were adapted from internationally validated instruments and translated following translation-back translation procedures to ensure linguistic equivalence.

3.4. Data Collection Procedure

The research data were collected between January and March 2026 through an online questionnaire distributed to employees working in businesses located in Nicosia and Famagusta. Before the data collection process, participants were informed about the purpose of the study, confidentiality principles, voluntary participation, and the anonymity of responses. Only participants who provided informed consent completed the questionnaire. Organizations from different industries were contacted through professional networks, and survey links were distributed electronically. After eliminating incomplete questionnaires, 412 valid responses were retained for analysis.

3.5. Data Analysis

The collected data were analyzed using IBM SPSS Statistics 28.0 and AMOS 24.0. Initially, descriptive statistics, frequency distributions, missing value analysis, and normality tests were conducted. Reliability analyses were then performed using Cronbach's Alpha coefficients. Construct validity was assessed through Confirmatory Factor Analysis (CFA). Pearson correlation analysis was used to examine the relationships among the variables. Multiple regression analysis was conducted to determine the direct effects between variables. The mediating role of digital trust was tested using the Bootstrapping Procedure proposed by Preacher and Hayes. The moderating effect of data literacy was examined using interaction analysis. Finally, Structural Equation Modeling (SEM) was employed to evaluate the overall conceptual model and test all proposed hypotheses simultaneously. Statistical significance was accepted at $p < .05$.

3.6. Researcher's Role

The researcher actively participated in all stages of the research process, including research design, questionnaire development, data collection, statistical analysis, interpretation of findings, and report preparation.

Throughout the study, the researcher maintained objectivity and strictly followed scientific research ethics. Participation was entirely voluntary, and all responses were treated confidentially. No identifying personal information was collected from participants, and all data were analyzed solely for academic purposes.

The researcher also ensured that all statistical analyses were performed accurately and interpreted objectively in accordance with established scientific standards.

3.7. Validity and Reliability

Before testing the structural model, the reliability and validity of all measurement scales were evaluated. Internal consistency reliability was assessed using Cronbach's Alpha coefficients. Values greater than 0.70 were considered acceptable. Construct validity was examined through Confirmatory Factor Analysis (CFA). Convergent validity was evaluated using Average Variance Extracted (AVE) and Composite Reliability (CR) values. AVE values greater than 0.50 and CR values greater than 0.70 indicated satisfactory convergent validity. Discriminant validity was assessed using the Fornell–Larcker criterion, ensuring that each construct was empirically distinct from the others. Model fit was evaluated using several goodness-of-fit indices, including Chi-square/df (χ^2/df), Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). The acceptable thresholds were $\chi^2/df < 3.00$, CFI $> .90$, TLI $> .90$, GFI $> .90$, AGFI $> .85$, RMSEA $< .08$, and SRMR $< .08$. The results demonstrated that the measurement model possessed satisfactory reliability and construct validity, supporting the subsequent structural analyses.

Table 1. Demographic Characteristics of the Participants (n = 412)

Variable	Category	n	%
Gender	Female	186	45.1
	Male	226	54.9
Age	18–25	68	16.5
	26–35	154	37.4
	36–45	112	27.2
	46–55	58	14.1
	56 years and above	20	4.8
Educational Level	High School	74	18.0
	Associate Degree	82	19.9
	Bachelor's Degree	168	40.8
	Master's Degree	64	15.5
	Doctorate	24	5.8
Work Experience	Less than 1 year	44	10.7
	1–5 years	142	34.5
	6–10 years	118	28.6
	11–15 years	72	17.5
	16 years and above	36	8.7
Sector	Banking and Finance	52	12.6
	Tourism	88	21.4
	Education	74	18.0
	Healthcare	46	11.2
	Retail	68	16.5
	Information Technologies	36	8.7
	Other	48	11.6
Position	Employee	238	57.8
	Supervisor	84	20.4
	Middle Manager	58	14.1
	Senior Manager	32	7.7
Total		412	100.0

As presented in Table 1, a total of 412 employees participated in the study. Of the participants, 54.9% were male and 45.1% were female. The largest age group consisted of employees aged 26–35 years (37.4%), followed by those aged 36–45 years (27.2%). Regarding educational attainment, the majority held a Bachelor's degree (40.8%). Most respondents had 1–5 years of work experience (34.5%). Participants represented various sectors, with tourism (21.4%) and education (18.0%) accounting for the largest proportions. In terms of organizational position, 57.8% were employees, while 42.2% occupied supervisory or managerial positions. These findings indicate that the sample represents employees from different demographic backgrounds and organizational contexts.

Table 2. Comparison of AI-Supported Corporate Communication and Strategic Decision-Making Quality According to Demographic Variables

Variable	Category	AI-Supported Corporate Communication (Mean $\pm$ SD)	Strategic Decision-Making Quality (Mean $\pm$ SD)	Test	t/F	p
Gender	Female	3.89 $\pm$ 0.58	3.95 $\pm$ 0.61	t-test	2.41	.017*
	Male	4.06 $\pm$ 0.62	4.11 $\pm$ 0.59			
Age	18–25	3.82 $\pm$ 0.56	3.87 $\pm$ 0.58	ANOVA	3.48	.008*
	26–35	3.95 $\pm$ 0.59	4.02 $\pm$ 0.60			
	36–45	4.08 $\pm$ 0.60	4.15 $\pm$ 0.57			
	46–55	4.16 $\pm$ 0.61	4.22 $\pm$ 0.56			
	56+	4.18 $\pm$ 0.55	4.25 $\pm$ 0.54			
Educational Level	High School	3.81 $\pm$ 0.60	3.86 $\pm$ 0.63	ANOVA	5.17	<.001*
	Associate Degree	3.92 $\pm$ 0.57	3.98 $\pm$ 0.61			
	Bachelor's Degree	4.03 $\pm$ 0.59	4.08 $\pm$ 0.58			
	Master's Degree	4.14 $\pm$ 0.56	4.20 $\pm$ 0.55			
	Doctorate	4.21 $\pm$ 0.53	4.29 $\pm$ 0.52			
Work Experience	<1 year	3.84 $\pm$ 0.60	3.89 $\pm$ 0.62	ANOVA	2.96	.020*
	1–5 years	3.93 $\pm$ 0.58	3.99 $\pm$ 0.59			
	6–10 years	4.05 $\pm$ 0.60	4.11 $\pm$ 0.58			
	11–15 years	4.12 $\pm$ 0.56	4.18 $\pm$ 0.55			
	16+ years	4.18 $\pm$ 0.54	4.24 $\pm$ 0.53			
Sector	Banking & Finance	4.09 $\pm$ 0.56	4.16 $\pm$ 0.57	ANOVA	2.18	.055
	Tourism	3.96 $\pm$ 0.60	4.02 $\pm$ 0.59			
	Education	4.07 $\pm$ 0.58	4.12 $\pm$ 0.57			
	Healthcare	3.99 $\pm$ 0.61	4.05 $\pm$ 0.60			
	Retail	3.91 $\pm$ 0.62	3.98 $\pm$ 0.61			
	Information Technologies	4.13 $\pm$ 0.55	4.20 $\pm$ 0.54			
	Other	3.94 $\pm$ 0.59	4.00 $\pm$ 0.58			
	Employee	3.92 $\pm$ 0.60	3.98 $\pm$ 0.61			
Position	Supervisor	4.02 $\pm$ 0.58	4.08 $\pm$ 0.57	ANOVA	4.08	.007*
	Middle Manager	4.13 $\pm$ 0.56	4.19 $\pm$ 0.55			
	Senior Manager	4.24 $\pm$ 0.53	4.31 $\pm$ 0.51			

p < .05

Independent Samples t-test and One-Way ANOVA results indicate that perceptions of AI-supported corporate communication and strategic decision-making quality differ significantly according to gender, age, educational level, work experience, and organizational position ($p < .05$). Male participants, older employees, individuals with higher educational attainment, those with longer work experience, and employees holding managerial positions reported significantly higher levels of AI-supported corporate communication and strategic decision-making quality. However,

no statistically significant differences were found across sectors ($p > .05$), suggesting that sectoral differences did not substantially influence participants' perceptions of the study variables.

Table 3. Descriptive Statistics, Reliability Analysis, and Correlation Matrix

Variables	Mean	SD	Cronbach's α	1	2	3	4
1. AI-Supported Corporate Communication	4.01	0.60	0.924	1			
2. Digital Trust	3.92	0.58	0.903	.684**	1		
3. Data Literacy	3.96	0.55	0.891	.592**	.618**	1	
4. Strategic Decision-Making Quality	4.08	0.57	0.931	.742**	.701**	.653**	1

Note: $p < .01$

Table 3 presents the descriptive statistics, internal consistency reliability coefficients, and Pearson correlation coefficients of the study variables. The findings indicate that all variables have relatively high mean scores, suggesting that participants generally reported positive perceptions regarding AI-supported corporate communication, digital trust, data literacy, and strategic decision-making quality. Cronbach's Alpha coefficients ranged from 0.891 to 0.931, demonstrating high internal consistency reliability for all measurement scales. Pearson correlation analysis revealed positive and statistically significant relationships among all study variables ($p < .01$). The strongest relationship was observed between AI-Supported Corporate Communication and Strategic Decision-Making Quality ($r = .742$), indicating that organizations with higher levels of AI-supported communication tend to exhibit higher strategic decision-making quality. In addition, AI-supported corporate communication showed strong positive relationships with Digital Trust ($r = .684$) and Data Literacy ($r = .592$). Digital Trust was also positively associated with Strategic Decision-Making Quality ($r = .701$), while Data Literacy demonstrated a moderate positive correlation with Strategic Decision-Making Quality ($r = .653$). Overall, the correlation coefficients support the proposed conceptual model and provide preliminary evidence for the subsequent regression, mediation, moderation, and structural equation analyses.

Table 4. Multiple Regression Analysis Results for Predicting Strategic Decision-Making Quality

Independent Variables	B	Std. Error	β	t	p
Constant	0.921	0.186	—	4.95	<.001
AI-Supported Corporate Communication	0.486	0.052	.471	9.35	<.001
Digital Trust	0.312	0.049	.294	6.37	<.001
Data Literacy	0.247	0.045	.229	5.49	<.001
Model Statistics			Value		
R			.824		
R ²			.679		
Adjusted R ²			.676		
F			286.74		
p			<.001		

Multiple regression analysis was conducted to examine the effects of AI-supported corporate communication, digital trust, and data literacy on strategic decision-making quality. The regression model was found to be statistically significant ($F = 286.74$, $p < .001$), explaining approximately 67.9% of the variance in strategic decision-making quality ($R^2 = .679$). The findings indicate that AI-supported corporate communication has the strongest positive effect on strategic decision-making quality ($\beta = .471$, $p < .001$). In addition, digital trust ($\beta = .294$, $p < .001$) and data literacy ($\beta = .229$, $p < .001$) also have positive and statistically significant effects on strategic decision-making quality. These results suggest that organizations with higher levels of AI-supported corporate communication, stronger digital trust, and better data literacy are more likely to achieve higher-quality strategic decisions. The regression findings provide empirical support for H1, H2, and H3 of the proposed research model.

Table 5. Mediation and Moderation Analysis Results

Structural Relationship	β	Boot LLCI	Boot ULCI	t	p	Result
AI-Supported Corporate Communication → Digital Trust	.684	.603	.752	14.86	<.001	Supported
Digital Trust → Strategic Decision-Making Quality	.317	.214	.411	6.48	<.001	Supported
AI-Supported Corporate Communication → Strategic Decision-Making Quality (Direct Effect)	.471	.382	.553	9.35	<.001	Supported
AI-Supported Corporate Communication → Strategic Decision-Making Quality (Indirect Effect)	.217	.153	.291	—	<.001	Partial Mediation
AI-Supported Corporate Communication × Data Literacy → Strategic Decision-Making Quality	.184	.102	.263	4.27	<.001	Moderation Supported

Bootstrapping analysis demonstrated that Digital Trust significantly mediates the relationship between AI-Supported Corporate Communication and Strategic Decision-Making Quality. The indirect effect was statistically significant ($\beta = .217$, 95% CI [.153, .291], $p < .001$), and the confidence interval did not include zero, indicating a partial mediation effect. Furthermore, the interaction analysis revealed that Data Literacy significantly moderates the relationship between AI-Supported Corporate Communication and Strategic Decision-Making Quality ($\beta = .184$, $p < .001$). Specifically, employees with higher levels of data literacy benefited more from AI-supported corporate communication than those with lower levels of data literacy. Overall, these findings confirm that AI-supported corporate communication improves strategic decision-making quality both directly and indirectly through digital trust, while the strength of this relationship increases as employees' data literacy levels rise. Therefore, H4 and H5 were supported.

Table 6. Hypothesis Testing Results

Hypothesis	Structural Relationship	β	t	p	Decision
H1	AI-Supported Corporate Communication → Strategic Decision-Making Quality	.471	9.35	<.001	Supported
H2	AI-Supported Corporate Communication → Digital Trust	.684	14.86	<.001	Supported
H3	Digital Trust → Strategic Decision-Making Quality	.317	6.48	<.001	Supported
H4	Digital Trust mediates the relationship between AI-Supported Corporate Communication and Strategic Decision-Making Quality	.217	—	<.001	Supported
H5	Data Literacy moderates the relationship between AI-Supported Corporate Communication and Strategic Decision-Making Quality	.184	4.27	<.001	Supported

Table 6 summarizes the results of the hypothesis testing. The findings indicate that all proposed hypotheses were supported.

The results revealed that AI-Supported Corporate Communication has a significant positive effect on Strategic Decision-Making Quality ($\beta = .471$, $p < .001$), supporting H1. AI-Supported Corporate Communication also demonstrated a significant positive influence on Digital Trust ($\beta = .684$, $p < .001$), confirming H2. Furthermore, Digital Trust significantly enhanced Strategic Decision-Making Quality ($\beta = .317$, $p < .001$), providing support for H3. The bootstrapping analysis confirmed that Digital Trust partially mediates the relationship between AI-Supported Corporate Communication and Strategic Decision-Making Quality, thereby supporting H4. Finally, the interaction analysis demonstrated that Data Literacy significantly moderates the relationship between AI-Supported Corporate Communication and Strategic Decision-Making Quality ($\beta = .184$, $p < .001$). Specifically, the positive effect of AI-supported corporate communication on strategic decision-making quality became stronger as employees' data literacy levels increased. Therefore, H5 was also supported. Overall, the empirical findings support the proposed conceptual model and indicate that AI-supported corporate communication contributes to higher strategic decision-making quality both directly and indirectly through digital trust, while data literacy strengthens this relationship.

6.1. Conclusion

The primary objective of this study was to examine the effect of AI-supported corporate communication on strategic decision-making quality among businesses operating in the Turkish Republic of Northern Cyprus (TRNC). Furthermore, the study investigated the mediating role of digital trust and the moderating effect of data literacy within this relationship. Based on data collected from employees working in businesses located in Nicosia and Famagusta, the findings provide important theoretical and practical insights into the role of artificial intelligence in organizational communication and strategic management. The empirical findings revealed that AI-supported corporate communication has a significant positive effect on strategic decision-making quality. Organizations that effectively integrate artificial intelligence into their communication processes are more capable of providing managers with accurate, timely, and data-driven information, thereby improving the quality of strategic decisions. These findings support previous studies suggesting that artificial intelligence enhances organizational communication efficiency, knowledge management, and managerial effectiveness. The results further demonstrated that digital trust plays a significant mediating role in the relationship between AI-supported corporate communication and strategic decision-making quality. This finding indicates that organizations benefit from AI-supported communication systems only when managers and employees trust AI-generated information and perceive digital technologies as reliable, transparent, and beneficial. Therefore, digital trust represents one of the most critical psychological mechanisms underlying successful AI implementation in organizations.

The moderating analysis showed that data literacy significantly strengthens the relationship between AI-supported corporate communication and strategic decision-making quality. Employees possessing higher levels of data literacy are better able to interpret AI-generated information, evaluate analytical outputs, and transform organizational data into strategic decisions. Consequently, investments in employee data literacy substantially increase the organizational value created by artificial intelligence. Overall, the findings suggest that artificial intelligence alone is insufficient to improve organizational decision quality. Rather, organizations should simultaneously develop trustworthy digital environments and strengthen employees' analytical competencies to maximize the strategic benefits of AI-supported communication systems. These findings contribute to the growing literature on artificial intelligence, organizational communication, and strategic management by integrating technological, behavioral, and organizational perspectives into a single conceptual framework.

6.2. Recommendations

1. Organizations should integrate AI-supported corporate communication into strategic decision-making processes to improve decision quality.
2. Managers should strengthen digital trust by ensuring transparent, secure, and ethical use of AI technologies.
3. Organizations should provide regular data literacy training to improve employees' ability to interpret and use AI-generated information.
4. Business leaders should encourage collaboration between human expertise and artificial intelligence to enhance communication and decision-making.
5. Future studies should examine additional variables, such as digital leadership, organizational culture, and innovation capability, and compare findings across different industries and countries.

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THE EFFECT OF BURNOUT SYNDROME ON JOB SATISFACTION AMONG EMPLOYEES IN THE TOURISM SECTOR IN THE TRNC

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ABSTRACT

The aim of this research is to examine the effect of burnout syndrome on job satisfaction among employees working in the tourism sector in the TRNC. The research is conducted using the relational survey model, one of the quantitative research methods. The population of the research consists of individuals working in the tourism sector in the TRNC. The sample comprises 373 tourism sector employees reached through the convenience sampling method. The data are collected through the Personal Information Form developed by the researcher, the Maslach Burnout Inventory, and the Job Satisfaction Scale. The data obtained are analyzed using the SPSS package program. In the analysis process, descriptive statistics, normality analysis, reliability analysis, independent samples t-test, one-way analysis of variance, Pearson correlation analysis, and regression analysis are applied. The research findings indicate that burnout syndrome has a negative and significant effect on job satisfaction amongst employees in the TRNC tourism sector. As employees' levels of burnout increase, their levels of job satisfaction decrease. Among the subdimensions of burnout, emotional exhaustion has the strongest effect on job satisfaction; the dimensions of depersonalisation and reduced sense of personal accomplishment also have a detrimental effect on job satisfaction. The findings highlight the importance, in terms of job satisfaction, of balancing workloads, ensuring adequate rest periods, increasing managerial support and making employees' achievements visible within tourism organisations.

Key Words: Burnout Syndrome, Job Satisfaction, Tourism Sector, TRNC.

1. Introduction

1.1. Problem Situation

In today's working life, the structure of the service sector based on intense human relations significantly strains the psychological, emotional and physical resources of the employees. The tourism sector is also among the services where employees are expected to maintain high performance, customer satisfaction, effective communication and emotional balance. Employees working in hotel businesses; may experience intense stress due to long working hours, shift work, seasonal workload, customer complaints and the pressure to constantly maintain service quality. These working conditions pave the way for the development of burnout syndrome in employees and a decrease in job satisfaction levels.

Burnout syndrome is considered an important psychological problem that occurs when employees experience a decrease in their physical, emotional and mental resources in the face of long-term work stress. Job satisfaction, on the other hand, refers to the level of satisfaction that the employee feels with his/her job, working conditions, managerial practices and professional experiences. In the literature, it is seen that there is an inverse relationship between burnout syndrome and job satisfaction. In the research conducted by Pacheco et al. on municipal employees, it is stated that burnout syndrome has significant effects on employee job satisfaction (Pacheco et al., 2023). A study conducted on emergency department workers also revealed that work-related problems increase burnout levels and affect job satisfaction levels (Moscu et al., 2023).

Research conducted in the field of health shows that burnout syndrome is closely linked to job satisfaction and psychological well-being. In a study conducted on professionals working in a teaching hospital in Brazil, it was stated that there were significant relationships between job satisfaction, burnout syndrome and depressive symptoms (Oliveira, Silva, Galvao, & Lopes, 2018). In the research conducted on doctors working in primary health care services in Turkey, it is emphasized that burnout syndrome, job satisfaction and factors related to these variables should be evaluated together (Aras et al., 2018).

The findings obtained in different study areas reveal that the effect of burnout on job satisfaction should be considered together with organizational variables. Budak and Erdal examine the mediating role of burnout syndrome in the relationship between toxic leadership and job satisfaction and show that managerial behaviors can have an impact on employee satisfaction through burnout (Budak and Erdal, 2022). In the meta-analysis study conducted on education stakeholders, it is stated that there is a significant relationship between burnout and job satisfaction (Kış et al., 2016).

The TRNC tourism sector is considered as one of the important working areas of the country's economy. Individuals working in hotel businesses operating in this sector are involved in intense customer relations, encounter increased workload, especially in the summer season, and work under the expectation of high service quality. These conditions increase the risk of burnout for employees; The increase in the level of burnout can negatively affect job satisfaction, service delivery quality, customer satisfaction, organizational commitment and competitiveness of businesses.

In this study, the effect of burnout syndrome on job satisfaction in TRNC tourism sector employees is examined. The main problem of the research is to determine how the burnout syndrome levels of individuals working in the tourism sector in the TRNC affect job satisfaction. This problem is important in terms of protecting the psychological well-being of employees, increasing job satisfaction levels and ensuring sustainable service quality in tourism enterprises.

1.2. Purpose of the Research

The aim of this study is to examine the effect of burnout syndrome on job satisfaction in individuals working in the TRNC tourism sector. Within the scope of the research, the relationship between the burnout levels of the employees and their job satisfaction levels was evaluated, and it was tried to determine to what extent burnout syndrome affects job satisfaction.

1.2.1. Sub-Objectives

In line with the main purpose of the research, answers are sought to the following sub-objective questions:

1. What are the burnout syndrome levels of TRNC tourism sector employees?
2. What is the job satisfaction level of TRNC tourism sector employees?
3. Is there a significant relationship between burnout syndrome levels and job satisfaction levels of TRNC tourism sector employees?
4. Does burnout syndrome levels of TRNC tourism sector employees have a significant effect on job satisfaction?
5. Does the emotional burnout levels of TRNC tourism sector employees have a significant impact on job satisfaction?
6. Does the depersonalization levels of TRNC tourism sector workers have a significant effect on job satisfaction?
7. Does the decrease in the perception of personal success of TRNC tourism sector employees have a significant effect on job satisfaction?

1.3. Importance of Research

This research, which is carried out specifically for the TRNC tourism sector, is important in terms of examining the effect of burnout levels on job satisfaction of individuals working in hotel businesses. Considering the place of tourism in the economic and social structure of the TRNC, the development of practices to increase the job satisfaction of employees and reduce burnout levels contributes to the competitiveness of enterprises. The research findings are expected to contribute to the regulation of human resources policies in tourism enterprises, the strengthening of employee assistance programs and the sustainability of service quality.

2. Theoretical Framework

2.1.1. The Concept and Definition of Burnout

The concept of burnout is defined as a syndrome that occurs when an individual's physical, mental and emotional resources weaken in the face of long-term stress, intense workload and emotional demands in working life. The introduction of the concept to the scientific literature takes place with the observations made by Herbert Freudenberger on volunteer health workers in the 1970s. Freudenberger explains this situation with the concept of "burnout" by determining that employees experience loss of energy, decrease in motivation, lose interest in their work and become emotionally worn out over time (Freudenberger, 1974).

Burnout is initially considered as a state of physical and emotional fatigue seen in professions that require intense communication with people. According to Freudenberger, long-term stress erodes the energy and endurance resources of the individual; over time, it becomes visible in the form of distancing from work, feeling of failure and psychological collapse (Freudenberger, 1974). The fact that the concept was discussed through healthcare professionals in the early periods shows how decisive the emotional burden is in professions based on service relations.

Theoretical development in the field of burnout gains a more systematic framework with the work of Christina Maslach. Maslach considers burnout as a psychological syndrome that develops under the influence of long-term work stress; especially individuals working in the service sector are at higher risk because they are in constant interaction with customers, patients, students or people from the service (Maslach and Jackson, 1981). Burnout

in the model developed by Maslach and Jackson; emotional exhaustion, depersonalization and decreased sense of personal achievement (Maslach & Jackson, 1981).

Since the 1980s, burnout research has gone beyond the field of health and spread to different sectors such as education, social services, banking, public administration and tourism. Pines and Aronson argue that burnout is not limited to individual fatigue; emphasizes that it is a multidimensional problem that should be evaluated together with organizational structure, working conditions and professional expectations (Pines and Aronson, 1988). Studies conducted in the 1990s show that factors such as workload, role conflict, lack of organizational support and low job satisfaction play an important role in the emergence of burnout (Leiter and Maslach, 1999).

2.2. Job Satisfaction

Job satisfaction is considered as one of the basic organizational behavior concepts that express the emotional evaluations that employees develop about their work, working environment and general work life. The harmony between the gains that the employee expects from his job and the opportunities offered by the job plays a decisive role in the formation of job satisfaction. Higher performance of individuals who are satisfied with their jobs, developing loyalty to the organization and strengthening the desire to stay in the job make job satisfaction important both individually and organizationally (Locke, 1976).

The concept of job satisfaction has long been studied by researchers working in the fields of organizational behavior and industrial psychology. The concept is defined as a general evaluation of an individual's feelings, thoughts and attitudes towards his/her job. Employees with high job satisfaction fulfill their duties more willingly, develop a positive attitude towards their working environment and contribute more to organizational goals. In employees with low job satisfaction, loss of motivation, decrease in performance, absenteeism and turnover tendency become more evident (Spector, 1997).

One of the most widely accepted definitions of job satisfaction in the literature is made by Locke. According to Locke, job satisfaction is expressed as a positive and pleasant emotional state that emerges as a result of an individual's evaluation of his/her job or work experiences. This definition shows that job satisfaction has an emotional quality along with the cognitive evaluation process. The employee compares the experiences he gains from his job with his expectations, values and needs; as the level of adaptation increases, job satisfaction also increases (Locke, 1976).

Vroom explains job satisfaction as an individual's emotional orientation towards the job role. According to this approach, an employee's satisfaction with his/her job is closely related to the positive feelings he/she develops towards his/her job. Meeting expectations, having positive experiences in the work environment, and seeing that the employee's effort produces meaningful results contribute to the strengthening of job satisfaction (Vroom, 1964).

Davis and Newstrom, on the other hand, evaluate job satisfaction as the sum of employees' positive or negative feelings towards their jobs. Job satisfaction increases when the gains of employees from their jobs coincide with their expectations; When expectations are not met, job dissatisfaction develops. This approach reveals that job satisfaction occurs as a result of the employee's holistic evaluation of their work experience (Davis and Newstrom, 1989).

Job satisfaction is a multidimensional concept. Different factors such as the quality of the work performed, wage level, working conditions, promotion opportunities, manager support, relations with colleagues, organizational justice and job security affect job satisfaction. Employees' overall satisfaction with work life is shaped by evaluating these factors together (Robbins & Judge, 2022).

Job satisfaction is also closely associated with motivation theories. Herzberg's Double Factor Theory, Maslow's Hierarchy of Needs Theory, and Vroom's Expectation Theory provide important theoretical foundations to explain why employees are satisfied with their jobs or experience job dissatisfaction. In these approaches, meeting employee needs, realizing expectations, strengthening the sense of achievement and appreciation are considered among the main factors that contribute to increasing job satisfaction (Herzberg, Mausner, & Snyderman, 1959).

METHOD 3

3.1. Research Model

The research was carried out on the basis of the relational survey model, one of the quantitative research methods. The relational survey model is defined as a research model that aims to determine the direction, level and co-change of the relationship between two or more variables (Karasar, 2016). Quantitative research, on the other hand, is based on measuring variables through numerical data and evaluating them with statistical analysis (Büyükoztürk et al., 2020). In this context, the effect of burnout syndrome on job satisfaction in TRNC tourism sector employees is examined.

3.2. Universe and Sample

The universe of the research consists of individuals working in the tourism sector in the TRNC. In the research, convenience sampling method is preferred among non-probability sampling methods because it is difficult to reach the entire universe in terms of time, cost and access. The convenience sampling method is used as a sampling method based on the collection of data from individuals who are accessible to the researcher and who agree to participate in the research (Büyüköztürk et al., 2020).

In order to evaluate the adequacy of the sample size, the sample size calculation formula used for large or unknown universes is used. As a result of the calculation, it is seen that the sample size of 373 people is sufficient for the research with a margin of error of approximately 5.1% and a confidence level of 95%. In the field of social sciences, a 95% confidence level and a margin of error of approximately 5% are considered an acceptable sample size. In this direction, the sample of the research consists of 373 employees working in the tourism sector in the TRNC and participating in the research. The sample size obtained is considered appropriate to examine the relationship between burnout syndrome and job satisfaction and the effect of burnout syndrome on job satisfaction.

3.3. Data Collection Tools

In the research, the data were collected through a questionnaire form consisting of three parts. In the first part of the questionnaire form, there is a Personal Information Form prepared by the researcher, in the second part there is the Maslach Burnout Scale, and in the third part, there is the Job Satisfaction Scale. The Personal Information Form includes the gender, age range, education level, department they work in and working time in the tourism sector.

In order to determine the burnout levels of the participants, the Maslach Burnout Scale, developed by Maslach and Jackson (1981) and used by Saçlı (2011) in the sample of hotel businesses, was used. Scale; It consists of three sub-dimensions: emotional exhaustion, depersonalization and decreased perception of personal success, and a total of 22 items. In the scale, 9 items measure emotional exhaustion, 5 items measure depersonalization, and 8 items measure decreased perception of personal success. Scale items are answered with a five-point Likert type rating. In Turkish adaptation studies, it is stated that the Cronbach Alpha coefficients of the scale are .83 for emotional exhaustion, .65 for depersonalization and .72 for personal achievement (Ergin, 1992). In a study conducted on tourism sector employees, the general reliability coefficient of the scale is reported as .953, the KMO value is .873 and the total variance rate explained is 69.02% (Güven and Sezici, 2016).

The Job Satisfaction Scale, developed by Brayfield and Rothe (1951) and short-form by Judge, Locke, Durham and Kluger (1998), was used to measure the job satisfaction levels of the participants. The scale has a one-dimensional structure and consists of 5 items. Items are scored between 1=Strongly Disagree and 5=Strongly Agree. Items 3 and 5 in the scale are scored inversely. In the Turkish adaptation study conducted by Keser and Bilir (2019), the Cronbach's Alpha coefficient of the scale was found to be .85, the KMO value was .795 and the total variance rate explained was 62.32%. In the same study, it was reported that the single-factor structure of the scale had acceptable fit values as a result of the confirmatory factor analysis ($\chi^2/df=4.6$, RMSEA=.05, NFI=.90, CFI=.92, GFI=.91, SRMR=.058).

3.4. Data Analysis

The data obtained within the scope of the research were analyzed through the SPSS package program. In the analysis process, firstly, the data set was checked, incomplete and erroneous data examinations were made, and then the assumption of normality regarding the scale and sub-dimensions was evaluated. Skewness and kurtosis values were taken into account in the normality examination. The skewness and kurtosis values are in the range of -1.50 to +1.50, indicating that the data are in accordance with the normal distribution (Tabachnick and Fidell, 2013). In order to evaluate the suitability of the scales for factor analysis, KMO values were examined, and values of .60 and above were evaluated at an acceptable level in terms of sample adequacy (Kaiser, 1974).

Table 1. Normality of Scales and KMO Analysis Results

Scale / Sub-Dimension	N	KMO Value	Skewness	Kurtosis	Evaluation
Maslach Burnout Scale	373	.884	.312	-.428	It is normally distributed
Emotional Exhaustion	373	.872	.486	-.217	It is normally distributed
Depersonalization	373	.781	.634	.295	It is normally distributed
Decreased Perception of Personal Success	373	.826	-.368	-.512	It is normally distributed
Job Satisfaction Scale	373	.807	-.451	-.338	It is normally distributed

When the findings in Table 1 are examined, it is seen that the KMO values for the scale and sub-dimensions used in the research vary between .781 and .884. These values indicate that the sample size is sufficient for factor

analysis. It is determined that skewness values are between -.451 and .634, and kurtosis values are between -.512 and .295. Since these values are within acceptable limits, it is considered that the data meet the normal distribution assumption. In this direction, it is accepted that it is appropriate to use parametric analysis techniques in the research.

In order to determine the validity and reliability levels of the scales used in the research, firstly, construct validity and internal consistency analyzes were performed. KMO values and factor structures were examined to evaluate the construct validity of the scales, and Cronbach's Alpha coefficients were calculated to determine the reliability levels. A Cronbach's Alpha coefficient of .70 and above indicates that the scale can be considered reliable (Nunnally and Bernstein, 1994). The reliability analysis results of the Maslach Burnout Scale and Job Satisfaction Scale used in the research are presented in Table 2.

Table 2. Reliability Analysis Results for Scales

Scale / Sub-Dimension	Number of Articles	Cronbach Alpha (α)	Reliability Level
Maslach Burnout Scale	22	.912	Highly reliable
Emotional Exhaustion	9	.896	Highly reliable
Depersonalization	5	.814	Highly reliable
Decreased Perception of Personal Success	8	.842	Highly reliable
Job Satisfaction Scale	5	.861	Highly reliable

When the reliability analysis results in Table 2 are examined, it is seen that the overall Cronbach Alpha coefficient of the Maslach Burnout Scale is .912. In terms of the sub-dimensions of the scale, the Cronbach's Alpha coefficient of the emotional exhaustion dimension is .896, the depersonalization dimension is .814, and the decrease in personal achievement perception dimension is .842. The Cronbach's Alpha coefficient of the Job Satisfaction Scale is determined as .861. The fact that all of the values obtained are above .70 indicates that the internal consistency levels of the scales used in the research are sufficient and provide reliable measurement.

4. Findings

Table 3 shows the distributions of the demographic characteristics of the participants. A total of 373 people working in the TRNC tourism sector participated in the research. The frequency and percentage values of the participants regarding their gender, age range, education level, department and working time in the tourism sector are presented below.

Table 3. Distribution of Demographic Characteristics of Participants

Variable	Category	f	%
Gender	Male	203	54.4
	Women	170	45.6
Age Range	18-25	86	23.1
	26-35	146	39.1
	36-45	98	26.3
	Over 45 years of age	43	11.5
Education Status	Primary Education	28	7.5
	High School	132	35.4
	Associate degree	95	25.5
	Undergraduate and higher	118	31.6
Department	Restaurant-Bar	96	25.7
	Kitchen	61	16.4
	Housekeeping	70	18.8
	Front Office	84	22.5
	Other	62	16.6
Working Time in the Tourism Sector	Less than 1 year	58	15.5
	1-4 years	138	37.0
	5-10 years	112	30.0

Variable	Category	f	%
	11 years and up	65	17.4
	Total	373	100.0

When Table 3 is examined, it is seen that 54.4% of the participants are male and 45.6% are female. In terms of age range, it is determined that the highest participation is in the 26-35 age group with 39.1%. In terms of educational status, it is seen that 35.4% of the participants are high school graduates, 31.6% are undergraduate and higher, 25.5% are associate degree graduates, and 7.5% are primary school graduates. The highest proportion in the distribution of departments consists of restaurant-bar employees with 25.7%. It is determined that the highest group in terms of working time in the tourism sector consists of those who work between 1-4 years with 37.0%.

Table 4 contains the descriptive statistics regarding the scale and sub-dimensions used in the research. Within the scope of descriptive statistics, the number of participants, minimum value, maximum value, arithmetic mean and standard deviation values are calculated.

Table 4. Descriptive Statistics on Scale and Sub-Dimensions

Scale / Sub-Dimension	n	Min.	Max.	Location.	Ss.
Maslach Burnout Scale	373	1.12	4.36	2.54	.68
Emotional Exhaustion	373	1.00	4.67	2.71	.79
Depersonalization	373	1.00	4.40	2.38	.73
Decreased Perception of Personal Success	373	1.13	4.25	2.47	.70
Job Satisfaction Scale	373	1.20	5.00	3.18	.82

When Table 4 is examined, it is seen that the overall average of the Maslach Burnout Scale is 2.54. In terms of sub-dimensions, it is determined that the highest average is in the emotional exhaustion dimension. The average emotional exhaustion rate of 2.71 shows that TRNC tourism sector employees experience a certain level of fatigue, exhaustion and loss of energy in their work life. The mean of the depersonalization sub-dimension is calculated as 2.38. This value shows that the level of developing distant attitudes towards customers, colleagues or the work environment is moderate. The mean of the sub-dimension of decrease in personal achievement perception is determined as 2.47. This finding shows that employees experience a moderate decrease in their perception of professional competence and success.

The average value for the Job Satisfaction Scale is calculated as 3.18. This finding shows that the job satisfaction levels of the participants were above the medium level.

In the study, Pearson correlation analysis was performed to determine the relationships between Maslach Burnout Scale, burnout sub-dimensions and Job Satisfaction Scale. Parametric correlation analysis was preferred because the data met the normal distribution assumption. The findings regarding the correlation analysis are presented in Table 5.

Table 5. Correlation Analysis Results Between Scale and Sub-Dimensions

Variables	1	2	3	4	5
1. Maslach Burnout Scale	1				
2. Emotional Exhaustion	.842**	1			
3. Depersonalization	.791**	.623**	1		
4. Decreased Perception of Personal Success	.768**	.548**	.586**	1	
5. Job Satisfaction Scale	-.612**	-.584**	-.497**	-.431**	1

Not: N=373; **p<.01.

When Table 5 is examined, it is seen that there is a negative and moderately significant relationship between Maslach Burnout Scale and Job Satisfaction Scale ($r=-.612$; $p<.01$). This finding suggests that as participants' burnout levels increased, their job satisfaction levels decreased.

When the relationships between burnout sub-dimensions and job satisfaction were examined, there was a negative and moderately significant relationship between emotional exhaustion and job satisfaction ($r=-.584$; $p<.01$). A negative and moderately significant relationship was found between depersonalization and job satisfaction ($r=-.497$; $p<.01$). A negative and moderate significant relationship was found between decreased perception of personal achievement and job satisfaction ($r=-.431$; $p<.01$).

In the study, regression analysis was performed to determine the effect of Maslach Burnout Scale and its sub-dimensions on the Job Satisfaction Scale. In the analysis, the Job Satisfaction Scale was considered as a

dependent variable. In the first stage, the effect of Maslach Burnout Scale overall score on job satisfaction was examined by simple linear regression analysis. In the second stage, the effect of emotional exhaustion, depersonalization and decrease in personal achievement perception sub-dimensions on job satisfaction was evaluated with multiple linear regression analysis.

Table 6. Regression Model of the Impact of Maslach Burnout Scale on Job Satisfaction

Independent Variable	Dependent Variable	R	R ²	Adjusted R ²	F	p
Maslach Burnout Scale	Job Satisfaction Scale	.612	.375	.373	222.432	.000

When Table 16 is examined, it is seen that the Maslach Burnout Scale has a significant effect on the Job Satisfaction Scale ($F=222.432$; $p<.05$). An R^2 value of .375 indicates that 37.5% of the total change in job satisfaction is explained by burnout level.

Table 7. Coefficients on the Impact of Maslach Burnout Scale on Job Satisfaction

Independent Variable	B	S.H.	b	t	p
Fixed	5.055	.129		39.186	.000
Maslach Burnout Scale	-.738	.049	-.612	-14.914	.000

When the coefficients in Table 7 are examined, it is determined that the Maslach Burnout Scale has a negative and significant effect on job satisfaction ($\beta=-.612$; $t=-14.914$; $p<.05$). Accordingly, as the burnout level of the participants increases, the level of job satisfaction decreases.

Table 8. Regression Model for the Effect of Burnout Sub-Dimensions on Job Satisfaction

Independent Variables	Dependent Variable	R	R ²	Adjusted R ²	F	p
Emotional exhaustion, depersonalization, decreased perception of personal success	Job Satisfaction Scale	.641	.411	.406	85.692	.000

When Table 8 is examined, it is seen that burnout sub-dimensions together have a significant effect on the Job Satisfaction Scale ($F=85.692$; $p<.05$). An R^2 value of .411 indicates that 41.1% of the total change in job satisfaction is explained by the sub-dimensions of emotional exhaustion, depersonalization, and decreased perception of personal success.

Table 9. Coefficients Regarding the Effect of Burnout Sub-Dimensions on Job Satisfaction

Independent Variables	B	S.H.	b	t	p
Fixed	5.359	.152		35.257	.000
Emotional Exhaustion	-.401	.049	-.386	-8.184	.000
Depersonalization	-.250	.052	-.223	-4.812	.000
Decreased Perception of Personal Success	-.201	.055	-.171	-3.654	.000

When Table 19 is examined, it is seen that the emotional exhaustion subdimension has a negative and significant effect on job satisfaction ($\beta=-.386$; $t=-8.184$; $p<.05$). The effect of the depersonalization sub-dimension on job satisfaction was also negative and significant ($\beta=-.223$; $t=-4.812$; $p<.05$). The sub-dimension of decrease in personal achievement perception also has a negative and significant effect on job satisfaction ($\beta=-.171$; $t=-3.654$; $p<.05$).

When standardized beta coefficients are taken into account, it is seen that the strongest effect on job satisfaction belongs to the emotional exhaustion sub-dimension. This is followed by depersonalization and decreased perception of personal success, respectively. In general, the level of burnout in TRNC tourism sector employees and the level of job satisfaction decreases as the sub-dimensions of burnout increase.

5. Discussion And Conclusion

In the research, it is determined that the burnout levels of TRNC tourism sector employees are at a moderate level. The fact that the highest average among the sub-dimensions is in the emotional burnout dimension shows that employees in the tourism sector are emotionally worn out due to intense customer relations, service pressure and work tempo. In Maslach and Jackson's (1981) approach to burnout, emotional exhaustion is considered as one of the main dimensions; Current findings support this approach.

As a result of the correlation analysis, a negative and significant relationship was found between burnout syndrome and job satisfaction. In Erdoğan's (2021) meta-analysis study, it is stated that there is a negative relationship between burnout and job satisfaction. In the study conducted by Üstündağ and Büber (2023), it is stated that emotional exhaustion and depersonalization reduce job satisfaction. The fact that emotional

exhaustion has the strongest relationship with job satisfaction in the current research is consistent with the findings in the literature.

The findings of the regression analysis reveal that the Maslach Burnout Scale has a negative and significant effect on job satisfaction. The overall burnout score explains 37.5% of the change in job satisfaction. When the sub-dimensions are taken together, the announced variance rate rises to 41.1%. The fact that the strongest effect is seen in the emotional exhaustion dimension shows that emotional wear and tear plays a decisive role in the satisfaction of employees from work. Koo et al. (2020) stated in their study on hotel employees that there were significant relationships between job satisfaction, burnout, and organizational outcomes. Alrawadieh and Dinçer (2021) reveal that emotional labor and burnout are effective on employee attitudes in tourism workers. The findings of this research support that burnout is an important variable that reduces job satisfaction for TRNC tourism sector employees.

As a result of the research, it is determined that burnout syndrome has a negative and significant effect on job satisfaction in TRNC tourism sector employees. As the burnout level of employees increases, the level of job satisfaction decreases. Among the sub-dimensions of burnout, emotional exhaustion has the strongest effect on job satisfaction. Depersonalization and decreased perception of personal success also have a reducing effect on job satisfaction.

The findings reveal the importance of practices that will reduce the emotional burden of employees in tourism enterprises. Balancing the workload, maintaining rest periods, increasing managerial support and making the success of employees visible are considered important for job satisfaction. Reducing the burnout levels of employees in the TRNC tourism sector strengthens both employee satisfaction and service quality.

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THE EFFECT OF JOB SATISFACTION ON EMPLOYEE PERFORMANCE IN HOTEL EMPLOYEES IN TRNC

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ABSTRACT

The aim of this research is to examine the effect of job satisfaction on employee performance in hotel employees in the TRNC. The research was carried out in line with the quantitative research approach and a relational survey model was used. The universe of the research consists of personnel working in hotel businesses operating in the TRNC. The sample consists of 362 hotel employees reached by convenience sampling method. The research data were collected through a personal information form, the Minnesota Job Satisfaction Scale, and the Employee Performance Scale. The data obtained were analyzed using the SPSS package program. As a result of the research, it was determined that the job satisfaction levels of hotel employees were above the medium level and the employee performance levels were high. It is seen that the level of internal satisfaction is higher than external satisfaction. In the analyzes made according to demographic variables, job satisfaction was determined according to marital status, age and working time in the institution; and employee performance differed significantly according to marital status, age and education level. As a result of the correlation analysis, there is a positive and moderately significant relationship between job satisfaction and employee performance. As a result of the regression analysis, it is determined that job satisfaction has a positive and significant effect on employee performance. Job satisfaction accounts for 30% of the change in employee performance.

Keywords : Job satisfaction, employee performance, hotel employees, intrinsic satisfaction, extrinsic satisfaction.

1. Introduction

1.1. Problem Situation

The tourism and hospitality industry is labor-intensive, with services largely produced through employees. Employee performance is a strategic variable for employees in hotel businesses to communicate directly with guests, meet customer expectations, maintain service quality and represent the corporate image of the business. Job satisfaction refers to employees' satisfaction levels with their jobs, work environment, managers, compensation and reward systems, career opportunities, and organizational conditions (Phuong & Tran, 2020). It is stated that employees with high job satisfaction in hotel businesses carry out their duties more willingly, establish more positive relationships with customers and contribute more to business goals. As a matter of fact, research on hotel employees shows that job satisfaction has significant and positive effects on employee performance (Zarini & Serly, 2024).

Previous research on the subject has shown that the performance of hotel employees cannot be explained only by individual skills; It shows that it is associated with variables such as job satisfaction, leadership communication, motivation, quality of working life, organizational support, emotional labor, stress and employee loyalty. Çöp and Doğanay (2020) reveal that leadership communication is effective on job satisfaction and job performance, while Rivaldo (2021) states that leadership and motivation affect employee performance through job satisfaction. Dorta-Afonso, González-de-la-Rosa, Garcia-Rodriguez, and Romero-Domínguez (2021) state that high-performance work systems have an impact on employee output through job satisfaction, motivation, and organizational commitment.

The multidimensional nature of the factors affecting job satisfaction and performance in hotel employees makes it necessary to examine the issue in terms of TRNC hotel businesses. The ability of hotel businesses in the TRNC to maintain service quality, increase customer satisfaction and gain competitiveness is closely related to the performance levels of their employees. At this point, determining the effect of job satisfaction levels of hotel employees on employee performance constitutes the main problem situation of the research.

1.2. Purpose of the Research

The main purpose of this research is to determine the effect of job satisfaction on employee performance in hotel employees in the TRNC. The aim of the study is to reveal to what extent the satisfaction levels of hotel employees with their jobs are reflected in the way they perform their duties, service delivery, customer relations

and contributions to organizational goals. Examining the relationship between job satisfaction and employee performance within the scope of the research contributes to the understanding of the importance of employee satisfaction in terms of performance in hotel businesses. Previous studies show that there are positive relationships between job satisfaction and employee performance (Phuong & Tran, 2020; Yoopetch, Nimsai, & Kongarchapatara, 2021; Zarini & Serly, 2024). This research focuses on the evaluation of this relationship in the sample of TRNC hotel employees.

The sub-objectives of this research are as follows:

1. What are the job satisfaction levels of hotel employees in the TRNC?
2. What are the employee performance levels of hotel employees in the TRNC?
3. Is there a significant relationship between job satisfaction of hotel employees and employee performance?
4. Does job satisfaction have a significant impact on employee performance?

1.3. Importance of Research

Employee performance in hotel businesses has a direct impact on service quality, customer satisfaction, customer loyalty and business success. In the study conducted by Alexandro, Uda, and Lestari (2021), it was determined that employee performance has a positive and significant effect on customer satisfaction. Similarly, Karatepe and Uludağ (2008) emphasize that the performance of hotel employees is important in terms of service quality and customer satisfaction.

Job satisfaction is one of the main variables affecting employees' attitudes towards the organization and their performance. Phuong and Tran (2020) state that job satisfaction has positive effects on employee loyalty and job performance. In a study conducted by Zarini and Serly (2024) on employees at The Zuri Hotel, it was concluded that job satisfaction significantly affects employee performance. This research is important in terms of examining the similar relationship in the context of TRNC hotel businesses.

The importance of the research stems from the fact that it reveals the impact of employee satisfaction on performance in TRNC hotel businesses and provides guiding information to managers in terms of human resources practices. Practices aimed at increasing employee job satisfaction can contribute to the improvement of service quality, strengthening customer satisfaction and the sustainable success of businesses. Işkın (2021) states that the quality of working life has positive effects on job satisfaction and employee performance; He states that training and development activities play an important role in this process.

The issue is also important in terms of employee well-being. Khuong and Linh (2020) reveal that work-related stress has an impact on employee motivation, job satisfaction, and employee loyalty, while Puspitawati and Atmaja (2021) state that job stress can have negative effects on job satisfaction and employee performance. For this reason, understanding the relationship between job satisfaction and performance is also valuable in terms of supporting employees psychologically and organizationally.

2. Theoretical Framework

2.1. Job Satisfaction Concept and Definition

Job satisfaction refers to the level of satisfaction that emerges from the general evaluation of the feelings, thoughts and attitudes that employees develop about their work, working environment, managers, colleagues and the organization. Job satisfaction, which is considered as one of the basic concepts in the fields of organizational behavior and human resources management, explains the level of satisfaction and happiness that employees obtain from their jobs. It is accepted that the satisfaction of employees with their jobs is as decisive as their knowledge and skills in the success of businesses (Locke, 1976). Job satisfaction develops depending on the harmony between the expectations of the employee and the conditions he encounters in business life. While meeting expectations contributes to the development of a positive attitude towards the employee's job, ignoring the needs can lead to job dissatisfaction. Therefore, job satisfaction is considered as a result of an individual's subjective evaluations of their work experience (Spector, 2022).

Job satisfaction shows a multidimensional structure that is affected by individual and organizational factors together. Individual factors such as age, gender, education level, personality traits, and career expectations can affect employees' job satisfaction levels. Organizational elements such as wages, working conditions, executive support, promotion opportunities, job security, and organizational culture also play a significant role in the formation of job satisfaction (Robbins & Judge, 2023).

In research, job satisfaction is handled with two basic approaches: general and dimensional job satisfaction. While general job satisfaction describes the general level of satisfaction of the employee with his/her job; dimensional job satisfaction includes the evaluation of factors such as wages, management, colleagues, promotion opportunities and working conditions separately. Such a distinction suggests that job satisfaction is not a one-way concept and should be considered in conjunction with different job characteristics (Spector, 2022). Job satisfaction is also examined with its internal and external dimensions. Intrinsic job satisfaction is associated with an individual's sense of accomplishment from their work, taking responsibility, using their creativity, and

opportunities for personal development. External job satisfaction includes factors arising from the work environment such as wages, fringe benefits, working environment, occupational safety and managerial practices. Job satisfaction in the service sector is more important due to the role of employees in the service process. The fact that employees in the tourism and hotel management sector are in constant communication with their guests makes job satisfaction directly related to service quality. Employees with high job satisfaction meet customer needs more effectively, contribute to the business image and increase customer satisfaction (Karatepe & Uludag, 2008).

Hotel businesses operate largely dependent on employee satisfaction due to their labor-intensive structure. High job satisfaction in accommodation businesses increases employee performance, reduces customer complaints and contributes to the improvement of service quality. For this reason, improving job satisfaction in hotel businesses is considered as a strategic human resources practice (Chiang & Jang, 2008). Job satisfaction also has an impact on employees' organizational commitment levels. It is seen that employees who are satisfied with their jobs tend to stay in the organization, their intention to leave the job decreases and they make more effort in line with organizational goals. In the tourism sector, where staff turnover is high, job satisfaction becomes an important factor that supports employee retention (Meyer, Stanley & Parfyonova, 2012).

2.2. Employee Performance

Employee performance refers to the degree to which an employee fulfills the specified tasks and responsibilities, the level of contribution to organizational goals and the impact on business results. In today's businesses, the sustainability of competitive advantage is largely dependent on the performance of employees; the reflection of knowledge, skills, experience and motivation in business processes directly affects organizational efficiency and effectiveness (Aguinis, 2019).

In general, employee performance is defined as the level at which an individual successfully fulfills the tasks in the job description within a certain period of time. The current understanding of performance includes business results as well as the behaviors that enable these results to be achieved. This approach requires that performance be evaluated in terms of process, effort and behavior dimensions as well as outputs (Campbell et al., 1993).

In the organizational behavior literature, employee performance is considered as the measure of an individual's contribution to organizational goals. Timely and high-quality execution of tasks, problem-solving skills, developing innovative ideas, and contributing to teamwork are among the important indicators of performance (Robbins & Judge, 2023).

Employee performance is shaped by the combined effect of individual and organizational factors. The employee's level of knowledge, professional competence, experience, motivation and personality traits are evaluated among individual factors. Leadership support, working conditions, organizational culture, reward system, and job satisfaction are among the organizational factors affecting performance (Armstrong & Taylor, 2023).

One of the key dimensions of employee performance is task performance. Task performance refers to the level of fulfillment of the basic tasks in the job description of the employee. The use of technical knowledge and skills, successful execution of business processes, efficiency, quality and the level of achieving goals are considered among the main indicators of task performance (Borman & Motowidlo, 1997).

Contextual performance, on the other hand, includes the voluntary behaviors of the employee that contribute to the organization beyond the official job description. Helping colleagues, contributing to organizational development, protecting the reputation of the institution and supporting the creation of a positive working environment are considered within the scope of contextual performance. These behaviors are seen among the important factors that increase organizational effectiveness (Motowidlo, Borman, & Schmit, 1997). There is a strong relationship between employee performance and motivation. Highly motivated employees perform their duties with more enthusiasm and energy. Rewarding and appreciating achievements positively affects the level of performance. According to the Expectancy Theory, employees perform higher when they believe that their efforts will turn into successful results and that these results will be rewarded (Vroom, 1964).

Method 3

3.1. Research Model

Quantitative research method was used in this research. Quantitative research is a research approach in which the relationships between variables are measured through numerical data, the data obtained are analyzed with statistical techniques, and the results are interpreted objectively (Creswell, 2014). The aim of quantitative research is to obtain measurable data on the identified problem situation and to reach generalizable results based on these data (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, & Demirel, 2020).

The research was carried out within the scope of the relational survey model. The relational survey model is a research model that aims to determine whether there is a co-change between two or more variables and the level of this change, if any, (Karasar, 2016). In this model, the current situation is examined as it is without any intervention on the variables. In this study, the relational survey model is considered appropriate as it is aimed to

determine the relationship between the job satisfaction levels of hotel employees and employee performance levels in the TRNC and to reveal the effect of job satisfaction on employee performance.

3.2. Universe and Sample

The universe of the research consists of personnel working in hotel businesses operating in the TRNC. Since it is difficult to reach the entire research universe in terms of time, cost and accessibility, sampling was preferred. In the research, convenience sampling method, one of the non-probability sampling methods, was used. Convenience sampling is a sampling method in which the researcher collects data from individuals who can reach and agree to participate in the research. This method is frequently used in social science research because it allows data collection in a short time, especially in large and dispersed universes (Büyükoztürk et al., 2020). Accordingly, the sample size required for the research was determined as 362 people. A total of 370 questionnaires were collected, taking into account that there may be data loss, incomplete or incorrectly filled questionnaires during the research process. As a result of the examination, incomplete and incorrectly filled forms were excluded from the scope of the research, and 362 usable questionnaires were included in the analysis. Thus, the sample of the research consisted of 362 people working in hotel businesses in the TRNC.

3.3. Data Collection Tools

Personal Information Form, Minnesota Job Satisfaction Scale and Job Performance Scale were used as data collection tools in the research.

3.3.1. Personal Information Form

The Personal Information Form was prepared by the researcher in order to determine the demographic characteristics of the participants. The form includes questions about gender, age, marital status, educational background, and length of employment in the institution. Gender: male and female; age 18-25, 26-35, 36-45, 46-55 and over 55 years old; marital status, married and single; educational status high school and below, associate, undergraduate and graduate; The duration of employment in the institution is classified as less than 1 year, 1-3 years, 4-6 years, 7-9 years and 10 years and above.

3.3.2. Minnesota Job Satisfaction Scale

The short form of the Minnesota Job Satisfaction Scale was used to determine the job satisfaction levels of hotel employees. The scale developed by Weiss et al. (1967) is a widely used tool to measure the general, internal and external job satisfaction levels of employees. As conveyed by Ergün (2026), the short form consists of 20 items and is evaluated with a 5-point Likert-type rating.

The expressions in the scale are scored between "1=Not satisfied at all" and "5=Very satisfied". An increase in the score obtained from the scale indicates an increase in the level of job satisfaction. The general satisfaction score was taken by taking the average of the 20 items; internal satisfaction score is over items 1, 2, 3, 4, 7, 8, 9, 10, 11, 15, 16 and 20; the extrinsic satisfaction score is calculated based on items 5, 6, 12, 13, 14, 17, 18, and 19 (Ergün, 2026). The Turkish validity and reliability study of the scale was carried out by Baycan (1985) and it is stated that the Turkish form is valid and reliable.

3.3.3. Job Performance Scale

In the research, the Job Performance Scale was used to determine the performance levels of hotel employees. The scale was developed by Kirkman and Rosen (1999) and Sigler and Pearson (2000) and adapted into Turkish by Çöl (2008). As conveyed by Fırat (2026), the scale is prepared for employees to evaluate their own work performance and consists of 4 items and a single dimension.

The Job Performance Scale is evaluated with a 5-point Likert type rating. Participants respond to the statements in the scale between "1=Strongly disagree" and "5=Strongly agree". An increase in the scale score indicates that the performance perception of the employees has increased. Scale; It is aimed at completing tasks on time, achieving business goals, meeting service quality standards, and evaluating problem-solving skills. In related studies, it is stated that the reliability values of the scale are at an acceptable level (Kirkman & Rosen, 1999; Sigler & Pearson, 2000; Çöl, 2008; Fırat, 2026).

3.4. Data Analysis

The data obtained within the scope of the research were analyzed using the SPSS package program. Before proceeding with the analysis process, the data set was examined, and incomplete or incorrectly filled questionnaire forms were excluded from the evaluation. 362 usable questionnaire forms were included in the analysis.

4. Findings

Table 1 shows the distributions regarding the demographic characteristics of the participants.

Table 1. Distribution of Demographic Characteristics of Participants

Variable	Group	Frekans (n)	Percentage (%)
Gender	Women	178	49,2
	Male	184	50,8
Age	18-25	82	22,7
	26-35	143	39,5
	36-45	88	24,3
	46-55	38	10,5
	55 and over	11	3,0
Marital Status	Married	158	43,6
	Single	204	56,4
	Total	362	100,0
Education Status	High school and below	92	25,4
	Associate Degree	96	26,5
	Undergraduate	137	37,8
	Graduate	37	10,2
Working Time in the Institution	Less than 1 year	54	14,9
	1-3 years	129	35,6
	4-6 years	92	25,4
	7-9 years	51	14,1
	10 years and above	36	9,9
Total		362	100,0

When Table 3 is examined, it is seen that 49.2% of the employees participating in the study are female and 50.8% are male. When the age distribution of the participants is examined, it is determined that the highest rate is 39.5% of the employees between the ages of 26-35. In terms of marital status, it is seen that 56.4% of the participants are single and 43.6% are married. When the educational status is examined, the largest part of the participants is undergraduate graduates with 37.8%. This is followed by employees with associate degree with 26.5%, high school or below with 25.4%, and postgraduate education with 10.2%. When evaluated in terms of working hours in their institution, it is seen that 35.6% of the participants work in the range of 1-3 years.

Table 2. Normality, Reliability and KMO Analysis Results of Scales

Scale / Sub-Dimension	n	Number of Articles	Average	Standard Deviation	Skewness	Kurtosis	SME	Bartlett Testi p
Job Satisfaction Scale General	362	20	3,74	0,61	-0,482	0,316	0,912	0,000
Inner Satisfaction	362	12	3,82	0,64	-0,521	0,428	0,895	0,000
Extrinsic Satisfaction	362	8	3,61	0,68	-0,397	0,284	0,873	0,000
Employee Performance Scale	362	4	4,06	0,57	-0,614	0,537	0,804	0,000

When Table 2 is examined, it is seen that the skewness values of the scales used in the research are between -0.614 and -0.397; kurtosis values vary between 0.284 and 0.537. The skewness and kurtosis values are within acceptable limits, indicating that the data meet the normal distribution assumption. In this direction, it was evaluated that parametric analyzes could be used in the research.

When the KMO values were examined, it was found that the KMO value for the overall score of the Job Satisfaction Scale was 0.912; 0.895 for the inner satisfaction sub-dimension; 0.873 for the external satisfaction sub-dimension and 0.804 for the Employee Performance Scale. These values indicate that the sample size is

sufficient for factor analysis. The fact that the results of the Bartlett Sphericity Test are significant in all scales reveals that there is a relationship between the scale items at a level where factor analysis can be performed.

Table 3. Reliability Analysis Results for Scales

Scale / Sub-Dimension	Number of Articles	Cronbach Alfa
Job Satisfaction Scale General	20	0,914
Inner Satisfaction	12	0,889
Extrinsic Satisfaction	8	0,861
Employee Performance Scale	4	0,842

When Table 3 is examined, it is seen that the Cronbach's Alpha coefficients for the scales used in the research vary between 0.842 and 0.914. The overall reliability coefficient of the Job Satisfaction Scale was calculated as 0.914, the intrinsic satisfaction sub-dimension was 0.889, the extrinsic satisfaction sub-dimension was 0.861, and the Employee Performance Scale was calculated as 0.842. The values obtained are above 0.70, indicating that the scales are at a reliable level.

Table 4. Descriptive Statistics on Scale and Sub-Dimensions

Scale / Sub-Dimension	n	Min.	Mak.	Location.	Sd.
Job Satisfaction Scale General	362	1,85	5,00	3,74	0,61
Inner Satisfaction	362	1,92	5,00	3,82	0,64
Extrinsic Satisfaction	362	1,75	5,00	3,61	0,68
Employee Performance Scale	362	2,00	5,00	4,06	0,57

Table 4 contains the descriptive statistics regarding the scale and sub-dimensions used in the research. Accordingly, the mean score of the Job Satisfaction Scale was calculated as 3.74, the mean of the intrinsic satisfaction sub-dimension was 3.82 and the mean of the extrinsic satisfaction sub-dimension was calculated as 3.61. These findings indicate that the job satisfaction levels of the participants were above the moderate level.

The fact that the average of internal satisfaction is higher than the average of external satisfaction indicates that hotel employees are more satisfied with factors such as success, responsibility, meaningfulness and personal development arising from the job itself. The relatively lower external satisfaction score suggests that external factors such as wages, working conditions, promotion opportunities and managerial practices are more areas for improvement for employees.

The average of the Employee Performance Scale being 4.06 shows that the participants evaluate their own performance at a high level. In general, it can be said that the job satisfaction levels of the hotel employees participating in the research are positive and the employee performance levels are high.

It was examined whether the general score of job satisfaction and the sub-dimensions of internal satisfaction and external satisfaction of the participants differed significantly according to demographic variables. Independent sample t-test for gender and marital status variables; one-way analysis of variance (ANOVA) was applied for the variables of age, educational level and working time in the institution. The significance level in the analyzes was accepted as $p < 0.05$.

In the study, Pearson correlation analysis was applied to determine the relationship between job satisfaction and employee performance. Within the scope of the analysis, the relationships between the variables of Job Satisfaction Scale overall score, internal satisfaction, external satisfaction and employee performance were examined. The correlation coefficient is between -1 and +1; A positive coefficient indicates that there is a same-way relationship between the variables, and a negative coefficient indicates that there is an inverse relationship. The significance level in the analyzes was accepted as $p < 0.05$.

Table 5. Correlation Analysis Results Between Job Satisfaction and Employee Performance

Variables	1	2	3	4
1. Job Satisfaction General	1			
2. Inner Satisfaction	0,912**	1		
3. Extrinsic Satisfaction	0,874**	0,692**	1	
4. Employee Performance	0,548**	0,526**	0,471**	1

** $p < 0.01$

When Table 5 is examined, it is seen that there is a positive and moderately significant relationship between job satisfaction overall score and employee performance ($r = 0.548$; $p < 0.01$). This finding shows that as the job satisfaction levels of hotel employees increase, so do the levels of employee performance.

There is also a positive and moderately significant relationship between internal satisfaction and employee performance ($r=0.526$; $p<0.01$). Accordingly, as the internal satisfaction elements such as success, responsibility, meaningfulness and personal development that employees obtain from the job itself increase, their performance levels also increase.

A positive and moderately significant relationship was found between external satisfaction and employee performance ($r=0.471$; $p<0.01$). This result shows that external satisfaction factors such as wages, working conditions, manager support, promotion opportunities and job security are related to employee performance.

In the study, regression analysis was applied to determine the effect of job satisfaction on employee performance. In this context, firstly, the effect of the overall score of the Job Satisfaction Scale on employee performance was examined with simple linear regression analysis. Then, multiple linear regression analysis was performed to determine the effect of intrinsic satisfaction and extrinsic satisfaction sub-dimensions on employee performance. The significance level in the analyzes was accepted as $p<0.05$.

Table 6. Simple Linear Regression Analysis Results on the Effect of Job Satisfaction on Employee Performance

Dependent Variable	Independent Variable	R	R ²	Adjusted R ²	F	p
Employee Performance	Job Satisfaction General	0,548	0,300	0,298	154,218	0,000**

** $p<0.01$

When Table 6 is examined, it is seen that the overall score of job satisfaction has a significant effect on employee performance ($F=154.218$; $p<0.01$). When the explanatory level of the model was examined, it was determined that job satisfaction explained 30% of the total variance in employee performance ($R^2=0.300$). This finding shows that as the job satisfaction levels of hotel employees increase, so do the levels of employee performance.

Table 7. Regression Coefficients for Job Satisfaction Overall Score

Model	B	Hrd. Hata	b	t	p
Fixed	2,145	0,156		13,750	0,000**
Job Satisfaction General	0,512	0,041	0,548	12,418	0,000**

** $p<0.01$

According to Table 7, the overall score of job satisfaction predicts employee performance positively and significantly ($\beta=0.548$; $t=12.418$; $p<0.01$). Accordingly, a one-unit increase in job satisfaction provides an increase of 0.512 units on employee performance. This result shows that the job satisfaction levels of hotel employees in the TRNC are an important determinant of employee performance.

Table 8. Multiple Linear Regression Analysis Results on the Effect of Intrinsic Satisfaction and Extrinsic Satisfaction on Employee Performance

Dependent Variable	Independent Variables	R	R ²	Adjusted R ²	F	p
Employee Performance	Inner Satisfaction, Outer Satisfaction	0,547	0,299	0,295	76,512	0,000**

** $p<0.01$

When Table 8 is examined, it is seen that the sub-dimensions of intrinsic satisfaction and extrinsic satisfaction together have a significant effect on employee performance ($F=76.512$; $p<0.01$). When the explanatory level of the model was examined, it was determined that intrinsic satisfaction and extrinsic satisfaction explained 29.9% of the total variance in employee performance ($R^2=0.299$). This finding shows that the sub-dimensions of job satisfaction make a significant contribution to explaining employee performance.

Table 9. Regression Coefficients of Intrinsic Satisfaction and Extrinsic Satisfaction

Model	B	Hrd. Hata	b	t	p
Fixed	2,133	0,158		13,500	0,000**
Inner Satisfaction	0,342	0,055	0,384	6,218	0,000**
Extrinsic Satisfaction	0,172	0,051	0,205	3,372	0,001**

** $p<0.01$

According to Table 9, intrinsic satisfaction predicts employee performance positively and significantly ($\beta=0.384$; $t=6.218$; $p<0.01$). External satisfaction also had a positive and significant effect on employee performance ($\beta=0.205$; $t=3.372$; $p<0.01$). When standardized beta coefficients are examined, it is seen that intrinsic satisfaction has a stronger effect on employee performance than extrinsic satisfaction.

5. Conclusion, Discussion And Recommendations

4.1. Conclusion

In this study, the effect of job satisfaction on employee performance among hotel employees in the TRNC is examined. The research findings show that the overall job satisfaction levels of hotel employees are above the medium level. The calculation of the overall score average of job satisfaction as 3.74 reveals that the satisfaction of the employees with their jobs is at a positive level. The fact that the average of internal satisfaction is 3.82 and the average of external satisfaction is 3.61 shows that employees are more satisfied with the content of the job, sense of achievement, taking responsibility and personal development opportunities. The fact that the average external satisfaction remains at a lower level suggests that areas such as wages, working conditions, promotion opportunities and managerial practices have aspects that need to be improved for hotel employees.

The fact that the average employee performance was determined as 4.06 shows that the performance perceptions of the hotel employees participating in the research are at a high level. It is understood that the participants have a positive assessment of completing their tasks on time, achieving business goals, maintaining service quality and finding solutions to problems. In hotel businesses where services are produced by direct human interaction, this finding reveals that employee performance is an important indicator of business success.

According to the results of the correlation analysis, there was a positive and moderately significant relationship between the overall score of job satisfaction and employee performance ($r=0.548$; $p<0.01$). A positive and moderately significant relationship was also found between internal satisfaction and employee performance ($r=0.526$; $p<0.01$). The relationship between external satisfaction and employee performance was also positive and significant ($r=0.471$; $p<0.01$). These findings show that as the job satisfaction levels of hotel employees increase, their performance levels also increase. When the relationship levels are compared, it is understood that the strongest relationship between employee performance and job satisfaction overall score and internal satisfaction is between job satisfaction.

The results of the regression analysis show that job satisfaction has a positive and significant effect on employee performance. The overall job satisfaction score explains 30% of the change in employee performance ($R^2=0.300$). When the regression coefficients were examined, it was seen that the overall score of job satisfaction significantly predicted employee performance ($\beta=0.548$; $p<0.01$). When the sub-dimensions of internal satisfaction and external satisfaction are evaluated together, it is determined that 29.9% of the change in employee performance is explained ($R^2=0.299$). The fact that the effect of internal satisfaction on employee performance is stronger than external satisfaction shows that the meaningful work, sense of achievement, taking responsibility and self-development opportunities are more decisive in the performance of hotel employees.

4.2. Discussion

The fact that job satisfaction has a positive and significant effect on employee performance shows that employee satisfaction in hotel businesses is closely related to performance behaviors. This finding is in line with the study conducted by Phuong and Tran (2020) on hospitality sector workers. In the relevant study, it is stated that job satisfaction has positive effects on employee performance and employee loyalty. In the research conducted by Zarini and Serly (2024) on hotel employees, it is concluded that job satisfaction significantly affects employee performance. The findings of the present study reveal a similar relationship for hotel employees in the TRNC and support the explanatory power of job satisfaction on performance.

The fact that the effect of internal satisfaction on employee performance is stronger than external satisfaction shows that the meaning of the job for the employee plays an important role in performance. The employee's feeling of success in his/her work, taking responsibility, using his/her own talents and finding room for development strengthens his/her performance. In the research conducted by Yooetch, Nimsai, and Kongarchapatara (2021), it is stated that employee learning, knowledge level, job satisfaction and career development positively affect performance. Dorta-Afonso, González-de-la-Rosa, Garcia-Rodriguez, and Romero-Domínguez (2021) state that high-performance work systems have an impact on employee outcomes through motivation, organizational commitment, and job satisfaction. When evaluated together with these studies, it is understood that the performance of hotel employees is closely related to the structural and psychological aspects of the job.

The positive relationship between external satisfaction and employee performance is also among the remarkable findings of the research. Factors such as wages, working conditions, manager support, promotion opportunities, and job security affect employees' attitudes towards work and their performance levels. In the study conducted by Çöp and Doğanay (2020), it is determined that perceived leadership communication is effective on job satisfaction and job performance. In the research conducted by Viseu, Pinto, Borrallha, and de Jesus (2020), it is stated that perceived organizational support is one of the important predictors of job satisfaction. These findings indicate that managerial support, open communication, and fair practices are crucial in enhancing employee performance in hotel establishments.

The fact that there is a moderately significant relationship between job satisfaction and employee performance in the study also shows that employee performance cannot be explained by a single factor. Although job

satisfaction is an important variable that strengthens performance, it is understood that factors such as leadership, motivation, organizational support, working conditions and job stress can also have an impact on performance. Rivaldo (2021) states that leadership and motivation have an impact on hotel employees' performance through job satisfaction. Candar and Bayın (2025) reveal that positive emotional contagion has positive effects on job satisfaction and job performance. At this point, employee performance should be evaluated together with emotional climate, motivation and managerial processes.

The fact that the average of external satisfaction is lower than the average of internal satisfaction produces a result that needs to be emphasized in terms of hotel businesses in the TRNC. The hotel industry can put pressure on employees due to intense work tempo, shift system, customer expectations and periodic workload increases. Khuong and Linh (2020) state that work-related stress has an impact on employee motivation, job satisfaction, and employee loyalty. The study by Puspitawati and Atmaja (2021) reveals that job stress can have negative effects on job satisfaction and employee performance. In this context, strengthening external satisfaction sources is considered important in terms of making employees' performance sustainable.

4.3. Recommendations

Practices should be developed to increase the job satisfaction levels of employees in hotel businesses. In particular, considering that the level of external satisfaction is lower than internal satisfaction, wages, working conditions, promotion opportunities and managerial support should be reviewed regularly.

In order to strengthen the internal satisfaction of employees, a working environment should be created where their achievements are made visible, they can take responsibility and continue their professional development. Training, development and career planning practices can be effective in increasing the performance of hotel employees.

It is important for managers to establish open, supportive and fair communication with employees. It is recommended to take into account the opinions of employees, strengthen feedback processes and carry out performance evaluations with a focus on development.

Workload, shift patterns and rest periods in hotel businesses should be planned in a way to maintain employee satisfaction. Improving working conditions can make the performance of employees sustainable.

In future research, the relationship between job satisfaction and employee performance; It can be examined together with variables such as leadership, organizational support, work stress, emotional labor and employee loyalty. Studies to be carried out in different regions and different types of hotels will contribute to the comparison of the findings.

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THE EFFECT OF ORGANISATIONAL SUPPORT ON EMPLOYEES' WORK-LIFE BALANCE IN NORTHERN CYPRUS: THE MEDIATING ROLE OF SUSTAINABLE DIGITAL TRANSFORMATION AND THE MODERATING EFFECT OF STRESS

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ABSTRACT

The purpose of this study is to examine the effect of digital transformation perception on employees' job stress in the Turkish Republic of Northern Cyprus (TRNC) and to identify the mediating role of work-life balance and the moderating role of perceived organizational support in this relationship. The study was conducted using a quantitative research approach and a correlational research design. The sample consists of 318 employees working in the public and private sectors in the TRNC who voluntarily participated in the study. Data were collected through a structured questionnaire measuring perceptions of digital transformation, work-life balance, job stress, and organizational support. The data were analyzed using SPSS 29, AMOS 24, and PROCESS Macro (Model 14). The findings indicate that perceived organizational support has a positive effect on employees' work-life balance. Employees who perceive higher levels of support from their organizations tend to evaluate their work-life balance more positively. The results also show that perceived organizational support positively influences sustainable digital transformation, and sustainable digital transformation, in turn, contributes to employees' work-life balance. In this respect, sustainable digital transformation serves as a mediating mechanism in the relationship between perceived organizational support and work-life balance. However, stress does not significantly moderate the relationship between sustainable digital transformation and work-life balance, nor does it create a significant moderated mediation effect.

Keywords : Digital transformation, job stress, work-life balance, organizational support

1. Introduction

1.1. Problem

Digital transformation has become an inevitable process for organizations seeking to maintain their competitive advantage and ensure long-term sustainability. This process encompasses not only the renewal of technological infrastructures but also the reconfiguration of organizational structures, work processes, managerial approaches, and working practices through digital technologies. Such comprehensive transformation fundamentally reshapes employee roles and expectations within organizations (Vial, 2019; Ebert & Duarte, 2018). In particular, the acceleration of work processes, increasing performance pressures, and expectations of constant availability associated with digitalization have profoundly altered employees' perceptions of work (Klein, 2020).

While digital transformation offers organizations advantages such as flexibility, efficiency, and innovation, it may also entail psychosocial risks for employees. The widespread adoption of Industry 4.0 applications, remote and flexible work arrangements, and digital collaboration tools has increasingly blurred the boundaries between work and private life (Türkel & Yeşilkuş, 2020; Bozkurt et al., 2021). Yankın (2019) emphasizes that digitalization intensifies time pressure in working life and complicates employees' ability to manage work demands. This indicates that the effects of digital transformation on employees are not only structural but also psychological in nature.

These changes encountered by employees during the digital transformation process can play a decisive role in shaping levels of job stress. Job stress is defined as a condition that arises when perceived job demands exceed an individual's available resources (Parker & DeCotiis, 1983). Factors such as increased workload, time pressure, role ambiguity, and role conflict tend to become more pronounced in organizations undergoing intensive digitalization. Studies by Avcı (2019) and Karabay (2015) demonstrate that job stress negatively affects employee performance, job satisfaction, and psychological well-being. Moreover, the constant need to adapt to ongoing change during digital transformation constitutes a significant source of stress for employees (Sutrisno, 2022).

At this point, the concept of work-life balance plays a critical role in explaining the relationship between digital transformation and job stress. Work-life balance refers to an individual's ability to manage responsibilities related to work and private life in a harmonious manner. Although the flexibility provided by digital technologies offers employees greater temporal and spatial autonomy, it may also lead to the intrusion of work into private life and a reduction in recovery and rest periods (Solmaz, 2024). Recent studies indicate that the deterioration of work-life balance constitutes one of the key mechanisms that intensify job stress (Altıntaş & Altıntaş, 2024; Bello et al.,

2024). In this context, the effect of digital transformation on job stress is considered to occur not only directly but also indirectly through work–life balance.

On the other hand, perceived organizational support emerges as an important buffering mechanism in mitigating the uncertainty and stress experienced by employees during digital transformation processes. Perceived organizational support refers to employees' beliefs that their organization and supervisors value their contributions, care about their well-being, and provide support (Eisenberger et al., 1986). Empirical evidence shows that employees with higher levels of perceived organizational support cope more effectively with stress and approach change processes more positively (Pabuçcu & İşcan, 2024; Uyar, 2024). Especially during periods of organizational change, managerial support, feedback, and recognition mechanisms strengthen employees' psychological resilience (Huang, 2025).

In the literature, the relationships among organizational support, sustainable digital transformation, work–life balance, and stress have mostly been examined through separate dyadic relationships. However, studies that simultaneously investigate the mediating role of sustainable digital transformation and the moderating effect of stress in the relationship between organizational support and employees' work–life balance remain limited. In particular, there is a notable scarcity of empirical research that addresses these variables within an integrated model in the context of Northern Cyprus. Therefore, examining the effect of organizational support on employees' work–life balance together with sustainable digital transformation and stress constitutes an important research problem with both theoretical and practical implications

1.2. Purpose of the Study

The aim of this study is to examine the effect of digital transformation on employees' job stress and to reveal the mediating role of work–life balance and the moderating effect of organizational support in this relationship. With the rapid acceleration of digitalization in contemporary working life, work processes, modes of working, and performance expectations have undergone significant changes, directly influencing employees' psychosocial experiences. In this context, the study seeks to explain how perceptions of digital transformation affect employees' levels of job stress. Another objective of the research is to analyze how work–life balance functions as a mediating mechanism in the relationship between digital transformation and job stress. The study investigates the effects of digital transformation on work–life balance and examines whether maintaining this balance plays a stress-reducing role. Furthermore, an additional aim of the research is to determine the extent to which perceived organizational support strengthens or weakens the relationship between work life balance and job stress.

1.3. Hypotheses

H1: There are statistically significant relationships among perceived organizational support, sustainable digital transformation, work–life balance, and job stress.

H2: Perceived organizational support has a significant effect on employees' work–life balance. H3: Perceived organizational support has a significant effect on sustainable digital transformation.

H4: Sustainable digital transformation has a significant effect on employees' work–life balance. H5: Sustainable digital transformation mediates the relationship between perceived organizational support and work–life balance.

H6: Job stress moderates the relationship between sustainable digital transformation and work–life balance.

H7: The indirect effect of perceived organizational support on employees' work–life balance through sustainable digital transformation differs significantly depending on the level of job stress.

1.4. Significance of the Study

Recent scholarship demonstrates that digital transformation reshapes work environments by increasing job demands and introducing new forms of strain, making employees' access to organizational resources more critical than ever (Vial, 2019; Klein, 2020; Bozkurt et al., 2021). Classical stress theories define job stress as an imbalance between environmental pressures and individual coping capacity (Selye, 1976; Parker & DeCotiis, 1983; Beehr, 1995), with role ambiguity, workload, and time pressure identified as major predictors (Folkman, 1984; Fisher, 1994). As workplaces digitize, additional stressors such as cognitive overload, continuous connectivity, and performance surveillance have emerged, encouraging the development of digital stress scales (Ingusci et al., 2021; Makowska-Tłomak et al., 2023). In parallel, work–life balance research highlights that imbalance contributes to burnout, reduced satisfaction, and conflict across life domains (Greenhaus et al., 2012; Brough et al., 2020; Kalliath & Brough, 2008). Organizational support theory posits that employees who feel valued and supported demonstrate higher commitment, stronger performance, and greater resilience to stress (Eisenberger et al., 1986; Kurtessis et al., 2017). Empirical evidence further indicates that perceived organizational support is closely associated with job stress, organizational trust, loyalty, and work–life balance (Çakar & Yıldız, 2009; Ötken, 2015; Contèh & Yuan, 2022; Meriç et al., 2019; Pabuçcu & İşcan, 2024). Studies focusing on digital transformation emphasize that its effects depend heavily on organizational climate, managerial attitudes, and employees' adaptation processes (Nadkarni & Prügl, 2021; Markus & Rowe, 2023; Wang, 2024). Moreover, demographic variables appear to play a limited role, whereas tenure, workplace culture, and perceived support exert stronger influence on employees' experiences of stress and balance (Özgül et al., 2020; Uyar, 2024; Ötken, 2015). Overall, the literature indicates that job stress in digitally transforming organizations is best understood through the combined effects of work–life

balance and perceived organizational support, both of which serve as essential psychosocial mechanisms shaping how employees respond to technological change (Demirtaş, 2021; Doghan et al., 2024; Idrovo & Bosch, 2019).

2. Conceptual Framework

2.1. Digital Transformation

The concept of digital transformation is the outcome of a long-term developmental process that dates back to the period when information and communication technologies began to spread widely. In particular, computerization and automation practices that emerged during the 1970s and 1980s constituted the initial foundation for discussions on transformation (Bozkurt et al., 2021). At this early stage, transformation was largely addressed within the scope of transferring data into digital formats and integrating information-processing systems into organizational structures. Over time, however, it became evident that technological advancement did not merely serve an instrumental function but also generated more enduring effects on organizational structures, labor relations, and forms of social interaction. This awareness paved the way for digital transformation to be considered within a broader conceptual framework, extending beyond narrow technical adaptation processes (Turkyılmaz, 2024).

The global diffusion of internet technologies and the development of network-based systems during the 1990s significantly expanded the scope of the digital transformation concept. In this period, transformation was evaluated not only through innovations at the hardware or software level but also in relation to changes in organizational forms, knowledge production processes, communication practices, and working arrangements. Digital transformation thus came to be distinguished from the notions of digitization and digitalization, evolving into an overarching concept that denotes structural and holistic change. This distinction demonstrates that transformation is not limited to isolated technological applications but instead refers to a multilayered process of change (Yankın, 2019).

From the 2000s onward, advances in digital technologies such as big data analytics, mobile technologies, cloud computing, and artificial intelligence added a new dimension to the literature on digital transformation. During this period, the concept began to be defined as a comprehensive process that reshapes decision-making mechanisms, modes of value creation, and organizational logics, rather than being confined to the renewal of technological infrastructures (Udovita, 2020). Scholarly perspectives increasingly emphasized that digital transformation represents a dynamic structure that is continuously reconfigured in response to changing conditions, rather than a linear adaptation process with clearly defined beginnings and endings (Sağlam, 2021).

Comprehensive evaluations within the conceptual literature indicate considerable diversity in the definitions of digital transformation. The fact that different disciplines address the concept through their own theoretical approaches has made it difficult to delineate its boundaries with precision. This situation has led to digital transformation being conceptualized both as an ongoing process and as an achieved outcome. As the impact of digital technologies on organizational and social structures deepens, arguments calling for a re-examination of the explanatory framework of the concept have gained increasing prominence (Nadkarni & Prügl, 2021).

Within these discussions, determining not only how digital transformation should be defined but also the level at which it occurs has emerged as a significant area of inquiry. While some studies approach the concept through the adoption of specific technologies, others frame it more broadly by emphasizing organizational alignment, cultural change, and strategic restructuring. These differing perspectives demonstrate that digital transformation is not a singular phenomenon but rather a multidimensional and multi-layered one (Markus & Rowe, 2023).

Digital transformation has not been considered solely as a consequence of technological advancement but has also been examined in conjunction with structural changes in working life, professional roles, and knowledge-based production processes. The disruptions created by digital technologies in ways of doing business have rendered definitions of transformation that frame it merely as a technical adaptation process insufficient (Yankın, 2019). In this regard, digital transformation is conceptualized as a process of large-scale restructuring that extends beyond individuals' and organizations' adjustment to digital tools. The increasing visibility of the socio-economic dimensions of transformation in the literature has contributed to a clearer understanding of its multi-layered structure (Varol, 2023).

2.2. Job Stress

Although the concept of stress is defined in various ways in the literature, it is generally described as the individual's response to an imbalance between environmental demands and available psychological, physiological, and social resources. Selye conceptualizes stress as the organism's general adaptation response to any demand, emphasizing that this response includes both physiological and psychological components (Selye, 1976). Lazarus and Folkman (1984), on the other hand, define stress as a process that emerges from the interaction between the individual and the environment, grounded in the perception that one's coping capacity has been exceeded, thereby foregrounding the role of cognitive appraisal. From this perspective, stress is not merely an automatic reaction to an external stimulus but a dynamic process closely linked to how individuals interpret and assign meaning to events.

Within the context of working life, stress is most commonly addressed through the concept of job stress. Job stress refers to a state of psychological and physiological strain that arises when work-related demands challenge or exceed the resources available to employees to cope with them. Beehr (1995) defines job stress as a process stemming from the interaction among the organizational environment, the individual, and job demands, highlighting the significance of both subjective evaluations and objective working conditions. Similarly, Quick and Quick (1984) view job stress as a response that results from a mismatch between the employee and the work environment, with the potential to influence both health and job performance.

Definitions of job stress are frequently structured around the balance between “job demands” and “individual or organizational resources.” Sutherland and Cooper (1988) conceptualize job stress as the strain experienced by individuals due to pressures arising from factors such as workload, role conflict, role ambiguity, organizational structure, and interpersonal relationships. Fisher (1994), particularly in academic contexts, demonstrates that performance expectations, evaluation pressure, and time constraints can develop into significant sources of stress for employees. These perspectives underscore that job stress is not merely a matter of individual vulnerability but is closely related to the nature of work and organizational arrangements.

2.3. Work–Life Balance

Work–life balance is defined as an individual’s capacity to sustain work-related duties and responsibilities alongside expectations and roles associated with private life without experiencing conflict between these domains. This balance does not merely entail an equal allocation of time; it also involves the satisfactory distribution of limited physical, emotional, and cognitive resources across work and life spheres. When this balance is disrupted, employees’ psychological well-being deteriorates, levels of stress and burnout increase, and organizational performance is adversely affected (Brough et al., 2020). For this reason, work–life balance is regarded by contemporary organizations as a key element that supports employee well-being and long-term success.

Among the primary factors shaping work–life balance are workload intensity, long working hours, the continuity of job demands, and the nature of managerial expectations. Individuals working under excessive workloads and constant time pressure are often unable to allocate sufficient time and energy to family life, social relationships, and personal needs. This situation negatively affects not only psychological health but also work-related attitudes, job satisfaction, and productivity. Studies conducted with academic staff indicate that increased job stress and work–family conflict lead to a marked decline in life satisfaction (Bell et al., 2012). These findings clearly demonstrate the extent to which job demands influence individuals’ private lives.

Organizational arrangements and managerial approaches play a crucial role in the achievement of work–life balance. Organizational structures that allow employees to plan their tasks and responsibilities, limit excessive workloads, and maintain reasonable performance expectations strengthen perceptions of balance. In such environments, employees tend to develop a stronger sense of control over their work, which in turn has positive effects on motivation and performance (Berkery et al., 2017). A stronger perception of organizational support further helps employees manage job demands in a healthier manner (Conteh & Yuan, 2022).

Organizational approaches that acknowledge family life and respect private spheres constitute another important factor supporting work–life balance. When employees feel that their family responsibilities are taken into consideration, role conflict diminishes and psychological relief increases. Supportive leadership behaviors, in particular, alleviate emotional exhaustion and foster more positive work-related attitudes. Social support received from managers and colleagues functions as a protective mechanism that offsets the adverse effects of job demands on private life (Greenhaus et al., 2012). Such support also strengthens employees’ organizational commitment (Di Stefano et al., 2018).

2.4 Organizational Support (Perceived Organizational Support)

Perceived organizational support refers to employees’ general beliefs regarding the extent to which the organization values their contributions, appreciates their efforts, and cares about their well-being. This perception is regarded as one of the fundamental factors determining the quality of the psychological relationship employees establish with their organization. Organizational attitudes toward employees, the opportunities provided, and the approaches adopted by management play a decisive role in the formation of perceived organizational support (Özdevecioğlu, 2013).

Conceptually, the organizational support perspective is grounded in social exchange theory and the norm of reciprocity. Accordingly, when employees perceive that they are supported by their organization, they tend to reciprocate this support by developing more positive attitudes toward the organization. This reciprocal relationship creates an interactional space in which emotional and cognitive bonds are formed alongside formal employment relations between the organization and the employee (Tamer & Bük, 2020).

The concept of perceived organizational support was initially introduced in the organizational behavior literature as a framework for explaining employees’ attitudes toward their organizations. Early studies associated the concept with factors such as organizational rewards, fair practices, and supervisory support. Over time, research has

demonstrated that organizational support is not limited to material resources but also encompasses psychological, emotional, and social dimensions (Çakar & Yıldız, 2009).

Within this scope, perceived organizational support has been examined as a construct closely related to perceptions of organizational justice, managerial behaviors, and organizational practices. When employees encounter fair and consistent practices, they tend to believe that the organization values them, thereby strengthening their perception of support. Consequently, organizational support is linked not only to managerial decisions themselves, but also to the manner in which these decisions are implemented (Ötken, 2015).

As the scope of the concept has expanded within the literature, perceived organizational support has become one of the key variables explaining employees' emotional attachment to the organization, levels of work engagement, and psychological well-being. Employees' sense of belonging to the organization becomes more pronounced in structures where perceived organizational support is strong (Meriç, Çiftçi & Yurtal, 2019).

Over time, perceived organizational support has emerged as a central concept in understanding employee attitudes and behaviors. Employees who believe that they are supported by their organization tend to behave more responsibly toward it and display a stronger inclination to align their individual goals with organizational objectives. In this respect, organizational support has been regarded as a key explanatory variable associated with attitudinal outcomes such as organizational commitment and job satisfaction (Krishnan & Mary, 2012).

3. Research Methodology And Findings

3.1. Research Model

This study was designed within the framework of a quantitative research approach and is based on a correlational research design aimed at examining the direction and strength of the relationships among variables. Quantitative research is defined as a research design that seeks to test cause–effect relationships and patterns of association among phenomena through numerical data and to produce generalizable findings (Creswell, 2014; Karasar, 2016). The correlational research model, in particular, aims to examine the degree of co-variation between two or more variables without any manipulation or intervention. Within this model, the researcher identifies the existence, direction, and magnitude of relationships among variables using statistical techniques (Karasar, 2016).

The correlational research design is widely used in the fields of organizational behavior, management, and the social sciences, especially for analyzing complex variable structures (Büyükoztürk, 2019). In this study, the research model was structured to test the direct, indirect, and conditional relationships among digital transformation, job stress, work–life balance, and organizational support. Digital transformation was treated as the independent variable, job stress as the dependent variable, work–life balance as the mediating variable, and organizational support as the moderating variable.

This multivariate structure was examined holistically through regression analysis, structural equation modeling, and moderated mediation analysis, enabled by the analytical flexibility offered by the correlational research design. Accordingly, the study goes beyond merely describing the relationships among variables and relies on advanced quantitative analyses to explain through which mechanisms and under which conditions digital transformation influences employees' job stress.

3.2. Population and Sample

The population of this study consists of employees working in public and private sector institutions and organizations operating in the Turkish Republic of Northern Cyprus (TRNC). Due to the inability to obtain precise numerical data regarding the population and the fact that the population exhibits a large and heterogeneous structure, a non-probability sampling method—convenience sampling—was employed. Convenience sampling allows the researcher to collect data from individuals who are easily accessible and who voluntarily agree to participate in the study. This method is frequently used in organizational behavior and social sciences research, particularly in studies involving large and heterogeneous populations, due to time and cost constraints (Büyükoztürk, 2019; Gürbüz & Şahin, 2018).

The adequacy of the sample size was evaluated in accordance with commonly accepted statistical criteria used in quantitative research. According to the guidelines proposed by Cohen (1992), for a medium effect size ($f^2 = 0.15$), a 95% confidence level, and 80% statistical power, a minimum sample size of 200 participants is considered sufficient for multivariate analyses. In addition, for advanced statistical techniques such as structural equation modeling and moderated mediation analyses, a sample size exceeding 200 is generally recommended (Kline, 2016; Hair et al., 2019).

Accordingly, the sample of the study consists of a total of 318 employees working in the public and private sectors in the TRNC who voluntarily participated in the research. This sample size is considered statistically adequate for conducting regression analysis, structural equation modeling, and moderated mediation analyses using the PROCESS macro. Therefore, the findings obtained from the study are deemed to provide reliable and valid results in representing the research population.

3.3. Data Collection Instruments

In this study, data were collected using a structured questionnaire composed of four validated measurement scales assessing digital transformation, work–life balance, job stress, and perceived organizational support. The digital transformation scale was adapted from conceptual and empirical frameworks highlighting the role of digital technologies in reshaping organizational structures, work practices, and strategic culture (Vial, 2019; Kane et al., 2015). The work–life balance scale was based on the bidirectional model developed by Netemeyer et al. (1996), which captures both work-to-family and family-to-work dynamics and has demonstrated strong reliability across diverse contexts. Job stress was measured using items informed by the Perceived Stress Scale (Cohen et al., 1983) and the Job Stress Scale (Parker & DeCotiis, 1983), focusing on time pressure and anxiety-related organizational stressors. Perceived organizational support was assessed using the widely applied scale developed by Eisenberger et al. (1986), which conceptualizes support as employees' perceptions of supervisor protection, recognition, and concern for well-being. All items employed a five-point Likert-type format (1 = strongly disagree, 5 = strongly agree). Following preliminary analyses, conceptually redundant or low-performing items were removed, resulting in a final set of 26 items that preserved theoretical coherence and enhanced measurement validity.

3.4. Data Analysis

Quantitative data analysis methods were employed in the study. After the questionnaire responses were entered into SPSS 29, the dataset was screened for missing values and outliers, and descriptive statistics (frequency, percentage, mean, standard deviation) were calculated. The internal consistency of the measurement instruments was evaluated through Cronbach's Alpha coefficients. To test the main relationship proposed in the research model, a simple linear regression analysis was first conducted to examine the effect of digital transformation on job stress. Subsequently, Structural Equation Modeling (SEM) was performed in AMOS 24 to assess the mediating role of work–life balance, with direct and indirect effects evaluated simultaneously and model fit assessed using χ^2/df , CFI, GFI, and RMSEA indices. In the final stage, moderated mediation was tested using PROCESS Macro (Model 14), examining whether the mediating effect of work–life balance varied across levels of perceived organizational support. Indirect effects were evaluated using bootstrap estimation (5,000 resamples, 95% CI). Normality assumptions were examined through the Kolmogorov–Smirnov and Shapiro–Wilk tests, along with skewness and kurtosis values, to ensure the appropriateness of parametric analyses such as regression and SEM.

Table 1. Normality Analysis

	Kolmogorov-Smirnov ^a			ShapiroWilk			Skewness	Kurtosis
	Statistic	df	Sig.	Statistic	df	Sig.		
Digital Transformation Scale	0,153	318	0,000	0,944	318	0,000	-0,418	-0,744
Work–Life Balance Scale	0,079	318	0,000	0,965	318	0,000	-0,209	-0,641
Job Stress Scale	0,063	318	0,004	0,978	318	0,000	-0,007	-0,767
Perceived Organizational Support Scale	0,111	318	0,000	0,931	318	0,000	-0,518	-0,702

The Kolmogorov–Smirnov and Shapiro–Wilk tests yielded significant results ($p < 0.05$) for all scales; however, these tests are known to be highly sensitive in large samples ($n > 300$) and may indicate significance even for minor deviations (Field, 2018; Tabachnick & Fidell, 2019). For this reason, normality should not be judged solely on the basis of these tests. Skewness and kurtosis values within ± 1 (and ± 2 in some guidelines) are generally considered acceptable indicators of approximate normality (George & Mallery, 2010; Hair et al., 2019). In this study, all scales fell within these thresholds. Taken together, despite the significant results of formal tests, the distributional characteristics support the assumption of approximate normality, making the use of parametric analyses appropriate. This approach aligns with common practice in studies employing SEM and AMOS. To determine the internal consistency levels of the scales used in the study, Cronbach's Alpha coefficients were calculated.

Table 2. Reliability Analysis

	Cronbach's Alpha	items
Digital Transformation Scale	0,832	6
Work–Life Balance Scale	0,716	4
Job Stress Scale	0,711	5

Perceived Organizational Support Scale	0,969	11
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Cronbach's Alpha was used to assess the internal consistency of the scales, with values of ≥ 0.70 considered acceptable, ≥ 0.80 high, and ≥ 0.90 very high reliability (Nunnally & Bernstein, 1994; Hair et al., 2019). The Digital Transformation Scale (6 items) yielded an Alpha of 0.832, indicating high reliability. The Work–Life Balance Scale (4 items) produced an Alpha of 0.716, which is acceptable, particularly for scales with few items. The Job Stress Scale (5 items) showed an Alpha of 0.711, demonstrating adequate internal consistency. The Perceived Organizational Support Scale (11 items) achieved an Alpha of 0.969, reflecting excellent reliability. Overall, all reliability coefficients exceeded recommended thresholds, confirming that the measurement instruments used in the study are internally consistent and appropriate for research purposes.

4. Research Findings

4.1. Demographic Variables

The table below presents the demographic characteristics of the study participants.

Table 3. Demographic Characteristics of the Participants

Variable	Category	n	%
Gender	Female	138	43.4
	Male	180	56.6
Age	Under 25	16	5.0
	25–34	84	26.4
Variable	Category	n	%
	35–44	76	23.9
	45–54	81	25.5
	55 and over	61	19.2
Education Level	High School	41	12.9
	Bachelor's Degree	124	39.0
	Master's Degree	87	27.4
	Doctorate	66	20.8
Marital Status	Single	170	53.5
	Married	148	46.5
Tenure in Current Job	Less than 1 year	45	14.2
	1–5 years	122	38.4
	6–10 years	72	22.6
	11–15 years	21	6.6
	More than 15 years	58	18.2
Position	Employee	154	48.4
	Manager	50	15.7
	Senior Manager/Director	73	23.0
	Auditor	17	5.3
	Other	24	7.5
Employment Type	Full-time	208	65.4
	Contract/Freelance	63	19.8
	Other	47	14.8
Sector	Public	106	33.3

	Private	212	66.7
Total		318	100.0

Of the participants, 56.6% were male (n = 180) and 43.4% were female (n = 138), indicating that male participants constituted the majority of the sample. An examination of the age distribution shows that most participants were concentrated in the 25–54 age range. Specifically, 26.4% were aged 25–34 (n = 84), 23.9% were aged 35–44 (n = 76), and 25.5% were aged 45–54 (n = 81). Participants aged 55 and over accounted for 19.2% (n = 61), while those under the age of 25 represented the smallest group at 5.0% (n = 16).

In terms of education level, a substantial proportion of participants were higher-education graduates. Bachelor's degree holders constituted the largest group at 39.0% (n = 124), followed by master's degree holders at 27.4% (n = 87) and doctoral degree holders at 20.8% (n = 66). High school graduates accounted for 12.9% of the sample (n = 41). Regarding marital status, 53.5% of the participants were single (n = 170) and 46.5% were married (n = 148), indicating a relatively balanced distribution.

An analysis of tenure in the current job revealed that participants with 1–5 years of work experience constituted the largest group at 38.4% (n = 122). This was followed by those with 6–10 years of tenure at 22.6% (n = 72) and those with more than 15 years at 18.2% (n = 58). Participants with less than one year of experience accounted for 14.2% (n = 45), while those with 11–15 years represented the smallest tenure group at 6.6% (n = 21).

With respect to organizational position, 48.4% of the participants were employees (n = 154), 23.0% were senior managers/directors (n = 73), and 15.7% were managers (n = 50). Auditors (5.3%, n = 17) and participants in other positions (7.5%, n = 24) were represented at lower rates. In terms of employment type, the majority of participants were employed full-time (65.4%, n = 208), while 19.8% were contract/freelance workers (n = 63) and 14.8% were employed under other arrangements (n = 47). Finally, 66.7% of the participants (n = 212) were employed in the private sector, whereas 33.3% (n = 106) worked in the public sector.

4.2. Descriptive Analyses

Table 4. Descriptive Statistics for the Variables Used in the Study

	Min.	Max.	Mean	SD
Digital transformation	1.67	5.00	3.5922	0.86883
Work–life balance	1.00	5.00	3.5212	0.94032
Job stress	1.40	5.00	3.3333	0.87868
Organizational support	1.00	5.00	3.5140	1.16787

The descriptive analysis results present the distribution of the four key variables examined in the study. The digital transformation variable ranges between 1.67 and 5.00, with a mean value of 3.59, indicating that participants perceive the level of digitalization in their organizations as moderately high. Work–life balance scores fall between 1.00 and 5.00, with an average of 3.52, suggesting that employees experience a partially balanced interaction between work and personal life. Job stress ranges from 1.40 to 5.00, with a mean of 3.33, pointing to a moderate level of stress among employees. Organizational support scores vary between 1.00 and 5.00 and average 3.51, showing that employees generally evaluate the support they receive from their organizations positively. The standard deviation values across all variables remain within acceptable limits, reflecting a relatively homogeneous distribution.

4.3. Correlation Analysis

In order to examine the relationships among the variables included in the study—digital transformation, work–life balance, job stress, and perceived organizational support—Pearson correlation analysis was conducted, and the results are presented in Table 5.

Table 5. Correlations among Digital Transformation, Job Stress, Work–Life Balance, and Perceived Organizational Support

		1	2	3	4
Digital Transformation	r	1	,366**	-.070	,269**
	p.		0,000	0,212	0,000
Work–Life Balance	r		1	-,161**	,414**

	p.	0,004	0,000
Work Stress	r	1	-,234**
	p.		0,000
Organisational Support	r	p.	1

The findings indicate a positive and moderate statistically significant relationship between digital transformation and work–life balance ($r = 0.366$; $p < 0.001$). A positive and significant relationship was also identified between digital transformation and perceived organizational support ($r = 0.269$; $p < 0.001$), suggesting that the digitalization process may play a role in enhancing employees' perceptions of organizational support. In contrast, no statistically significant relationship was found between digital transformation and job stress ($r = -0.070$; $p > 0.05$), indicating that perceptions of digital transformation are not directly associated with levels of job stress.

Furthermore, a positive and moderate statistically significant relationship was observed between work–life balance and perceived organizational support ($r = 0.414$; $p < 0.001$). On the other hand, a negative and moderate statistically significant relationship was identified between job stress and work–life balance ($r = -0.344$; $p < 0.001$). This finding suggests that as job stress increases, perceptions of work–life balance tend to weaken. Similarly, a negative and moderate statistically significant relationship was found between job stress and perceived organizational support ($r = -0.254$; $p < 0.001$), indicating that perceived organizational support may function as a factor that helps reduce job stress.

4.4. Regression Analysis

Table 6. The Effect of Digital Transformation on Employees' Job Stress (Regression Analysis)

	Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	p.
	B		Beta		
Constant	3,588	0,210		17,109	0,000
Digital Transformation	-0,071	0,057	-0,070	-1,250	0,212
	F	p.	R	R ²	
	1,563	,212 ^b	,070 ^a	0,005	

The regression analysis results presented in the table indicate that the direct effect of digital transformation on employees' job stress is not statistically significant. According to the analysis, although the regression coefficient of digital transformation on job stress is negative ($B = -0.071$; $\beta = -0.070$), the level of significance exceeds acceptable thresholds ($p = 0.212 > 0.05$).

Regarding the overall model fit, the regression model itself is also not statistically significant ($F = 1.563$; $p = 0.212$). In addition, the explained variance is very low ($R^2 = 0.005$), indicating that digital transformation alone accounts for only about 0.5% of the variance in job stress. These findings suggest that employees' job stress levels may be influenced more strongly by other individual, organizational, or environmental factors rather than by digital transformation alone.

The results further imply that the effect of digital transformation on job stress may not be direct but may instead operate through mediating mechanisms such as work–life balance or through moderating factors such as organizational support. Accordingly, these findings provide both theoretical and empirical justification for the mediation and moderation models tested in the subsequent stages of the study.

4.5. Structural Equation Model

Table 7. Structural Relationships among Organizational Support, Sustainable Digital Transformation, and Work–Life Balance (Mediation Model)

Path (Dependent ← Independent)	B (Estimate)	S.E.	C.R.	p
Sustainable Digital Transformation ← Organizational Support	0.200		0.040 4.980	<0.001
Work–Life Balance ← Sustainable Digital Transformation	0.297		0.055 5.395	<0.001
Work–Life Balance ← Organizational Support	0.274		0.041 6.687	<0.001

Variable	Variance	S.E.	C.R.	p
Organizational Support	1.360	0.108	12.590	<0.001
Error Term (e1) – Sustainable Digital Transformation	0.698	0.055	12.590	<0.001
Error Term (e2) – Work–Life Balance	0.669	0.053	12.590	<0.001

Note. B = unstandardized regression coefficient; S.E. = standard error; C.R. = critical ratio. The model was tested using the maximum likelihood method. $p < 0.001$.

The explained variance value for Sustainable Digital Transformation was calculated as $R^2 = 0.073$, while the explained variance value for Work–Life Balance was calculated as $R^2 = 0.241$.

According to the structural equation modeling results, organizational support had a positive and significant effect on sustainable digital transformation ($B = 0.200$; $C.R. = 4.980$; $p < 0.001$). This finding indicates that as employees' perceptions of organizational support increase, their perceptions of sustainable digital transformation also increase. Sustainable digital transformation also had a positive and significant effect on work–life balance ($B = 0.297$; $C.R. = 5.395$; $p < 0.001$). In addition, the direct effect of organizational support on work–life balance was found to be significant ($B = 0.274$; $C.R. = 6.687$; $p < 0.001$). These results show that organizational support affects work–life balance both directly and indirectly through sustainable digital transformation.

4.6. Mediation Analysis Results

Table 8. Results of the Moderated Mediation Analysis among Perceived Organizational Support, Sustainable Digital Transformation, Stress, and Work–Life Balance (PROCESS Model 14)

Panel A. Effect of Perceived Organizational Support on Sustainable Digital Transformation (X → M)

Variable	B	SE	t	p	R ²
Constant	-0.7042	0.1492	-4.7195	<0.001	
Perceived Organizational Support	0.2004	0.0403	4.9726	<0.001	0.0726

Panel B. Effects on Work–Life Balance (X, M, W, and Interaction)

Variable	B	SE	t	p
Constant	2.6048	0.1550	16.8030	<0.001
Perceived Organizational Support (X)	0.2613	0.0421	6.2048	<0.001
Sustainable Digital Transformation (M)	0.2986	0.0554	5.3942	<0.001
Stress (W)	-0.0726	0.0541	-1.3408	0.1810
M × W	0.0326	0.0604	0.5397	0.5898

Model summary: $R^2 = 0.2457$; $F(4, 313) = 25.4835$; $p < 0.001$

Panel C. Conditional Indirect Effects of Perceived Organizational Support on Work–Life Balance at Levels of Stress

Level of Stress	Effect	BootSE	BootLLCI	BootULCI
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Low (16th percentile)	0.0538	0.0255	0.0106	0.1106
Medium (50th percentile)	0.0603	0.0210	0.0238	0.1051
High (84th percentile)	0.0668	0.0280	0.0185	0.1276

Panel D. Index of Moderated Mediation

Moderator	Index	BootSE	BootLLCI	BootULCI
Stress	0.0065	0.0165	-0.0262	0.0401

Note. B = unstandardized coefficient; SE = standard error; BootLLCI and BootULCI = lower and upper limits of the 95% bootstrap confidence interval.

A moderated mediation analysis was conducted using PROCESS Model 14 to examine whether Sustainable Digital Transformation mediated the relationship between Perceived Organizational Support and Work–Life Balance, and whether this indirect effect varied depending on Stress. The results showed that Perceived Organizational Support significantly and positively predicted Sustainable Digital Transformation ($B = 0.2004$, $SE = 0.0403$, $t = 4.9726$, $p < 0.001$), explaining 7.26% of the variance in the mediator.

For Work–Life Balance, both Perceived Organizational Support ($B = 0.2613$, $SE = 0.0421$, $t = 6.2048$, $p < 0.001$) and Sustainable Digital Transformation ($B = 0.2986$, $SE = 0.0554$, $t = 5.3942$, $p < 0.001$) had significant positive effects. In contrast, Stress did not have a significant direct effect on Work–Life Balance ($B = -0.0726$, $SE = 0.0541$, $t = -1.3408$, $p = 0.1810$). Likewise, the interaction between Sustainable Digital Transformation and Stress was not statistically significant ($B = 0.0326$, $SE = 0.0604$, $t = 0.5397$, $p = 0.5898$), indicating that Stress did not moderate the relationship between Sustainable Digital Transformation and Work–Life Balance.

The conditional indirect effects of Perceived Organizational Support on Work–Life Balance through Sustainable Digital Transformation were significant at low, medium, and high levels of Stress, as the 95% bootstrap confidence intervals did not include zero. However, the index of moderated mediation was not significant (Index = 0.0065, BootSE = 0.0165, 95% CI [0.0262, 0.0401]), since the confidence interval included zero. These findings indicate that

Sustainable Digital Transformation plays a mediating role in the relationship between Perceived Organizational Support and Work–Life Balance, but this mediating effect does not vary significantly across levels of Stress.

5. Conclusion, Discussion And Recommendations

The research findings clearly demonstrate that work–life balance plays a critical role in employee well-being. The positive relationship between work–life balance and organizational support shows that supportive organizational practices strengthen employees' ability to maintain balance between different life domains. In parallel, increases in work–life balance and perceived organizational support are associated with lower levels of job stress, confirming that these variables function as protective factors against job stress. When the regression and structural equation modeling results are considered together, it is evident that the effect of digital transformation perception on job stress operates not directly but indirectly through work–life balance. The positive effect of digital transformation perception on work–life balance, combined with the stress-reducing role of work–life balance, indicates that work–life balance serves as a full mediator in this relationship. The moderated mediation analyses further reveal that organizational support does not assume a moderating role in the indirect relationship between digital transformation and job stress. Although perceived organizational support is independently associated with job stress and represents an important resource for employee well-being, it does not appear to function as an interactional mechanism within the digital transformation–work–life balance–job stress relationship.

The findings show that perceived organizational support is an important organizational resource that strengthens employees' work–life balance. The positive relationship between organizational support and work–life balance indicates that supportive organizational practices contribute to employees' ability to establish a healthier balance between work and non-work life domains. Previous studies also show that perceived organizational support has positive effects on employees' work–life balance, psychological well-being, and organizational commitment (Özgül, Erkmén, & Karaarslan, 2020; Takım & Timüroğlu, 2022). Within the scope of this study, sustainable digital transformation was found to play a mediating role in the relationship between organizational support and work–life balance. This finding suggests that when employees feel supported by their organizations, they evaluate digital transformation processes within a more positive and sustainable framework, and this evaluation positively reflects on their work–life balance. It is understood that the effects of digital transformation processes on employees should be explained not only through technological infrastructure or organizational efficiency, but also through employee-

oriented support mechanisms and psychosocial processes. Similarly, Demirtaş (2021) and Akbar et al. (2025) emphasize that the effects of technological transformation on employees are closely related to work–life balance and psychological adaptation processes. However, stress was not found to significantly moderate the relationship between sustainable digital transformation and work–life balance. This result indicates that stress did not assume the expected interactional role in the model, while organizational support and sustainable digital transformation were more decisive variables for employees’ work–life balance. In this respect, the findings are also consistent with studies suggesting that organizational support may not function as a moderating mechanism in every context, but may instead operate as an independent organizational resource that produces direct and indirect effects (Idrovo & Bosch, 2019).

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THE IMPACT OF AI-POWERED CORPORATE COMMUNICATIONS ON CONSUMER BRAND LOYALTY: THE MEDIATING ROLE OF DIGITAL TRUST AND THE MODERATING EFFECT OF TECHNOLOGICAL ANXIETY

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ABSTRACT

The rapid advancement of artificial intelligence (AI) technologies has significantly transformed corporate communication practices by enabling organizations to deliver faster, more personalized, and data-driven interactions with consumers. In this context, understanding how AI-supported corporate communication influences consumer behavior has become increasingly important. The primary aim of this study is to examine the effect of AI-supported corporate communication on consumer brand loyalty while investigating the mediating role of digital trust and the moderating effect of technology anxiety.

A quantitative research approach was adopted, and a relational survey model was employed. The study was conducted among consumers residing in the six districts of the Turkish Republic of Northern Cyprus (TRNC): Nicosia, Famagusta, Kyrenia, Güzelyurt, İskele, and Lefke. Data were collected from 381 participants through a structured questionnaire using a simple random sampling method. The questionnaire included measures of AI-supported corporate communication, digital trust, technology anxiety, and brand loyalty. Data analyses were performed using SPSS 28 and AMOS 24. Reliability analysis, confirmatory factor analysis, descriptive statistics, correlation analysis, regression analysis, mediation analysis, and moderation analysis were conducted.

The findings revealed that AI-supported corporate communication has a significant positive effect on both digital trust and consumer brand loyalty. Digital trust was also found to positively influence brand loyalty. Furthermore, mediation analysis demonstrated that digital trust partially mediates the relationship between AI-supported corporate communication and brand loyalty. Moderation analysis indicated that technology anxiety weakens the positive effect of AI-supported corporate communication on brand loyalty. Consumers with lower levels of technology anxiety exhibited stronger loyalty responses to AI-supported communication practices, whereas those with higher levels of technology anxiety demonstrated weaker loyalty outcomes.

Overall, the study highlights the strategic importance of AI-supported corporate communication in fostering consumer trust and long-term brand loyalty. The findings suggest that organizations should focus on enhancing transparency, credibility, and ethical standards in AI-driven communication practices while simultaneously addressing consumers' technology-related concerns. The study contributes to the literature by integrating communication and business perspectives and providing empirical evidence from the TRNC context.

Keywords: Artificial Intelligence, AI-Supported Corporate Communication, Digital Trust, Technology Anxiety, Brand Loyalty, Consumer Behavior.

Introduction

In today's rapidly evolving digital environment, businesses increasingly utilize artificial intelligence (AI) technologies to establish faster, more effective, and highly personalized communication with their target audiences. AI applications have transformed corporate communication processes by enhancing customer service, social media management, content creation, data analytics, and consumer relationship management. Through AI-supported communication systems, organizations can better understand consumer needs, deliver customized messages, and improve communication efficiency, thereby strengthening relationships with stakeholders (Kaplan & Haenlein, 2019).

However, the growing integration of AI technologies into communication activities has also reshaped consumers' perceptions of trust in digital environments. The increasing volume of AI-generated content has led consumers to become more cautious regarding the credibility, transparency, and authenticity of information shared through digital channels. Consequently, digital trust has emerged as one of the most significant concepts in contemporary communication and business research (Dwivedi et al., 2023).

Digital trust refers to consumers' confidence in digital platforms, technologies, information systems, and online interactions. Consumers who trust digital communication channels are more likely to engage with brands, develop positive attitudes, and establish long-term relationships. In this regard, digital trust plays a critical role in enhancing

customer engagement and fostering brand loyalty within AI-supported communication environments (Gefen, Karahanna, & Straub, 2003).

At the same time, consumers do not respond to artificial intelligence technologies in the same way. While some individuals perceive AI as innovative, useful, and beneficial, others experience concerns related to privacy, security, employment displacement, and the loss of human control. These concerns are commonly conceptualized as technology anxiety in the literature. Technology anxiety may influence how consumers perceive and respond to AI-supported communication practices, thereby affecting their trust and loyalty toward brands (Venkatesh et al., 2003).

Brand loyalty is defined as a consumer's commitment to continuously prefer a specific brand despite the availability of competing alternatives. It is widely recognized as one of the most valuable strategic assets for organizations seeking sustainable competitive advantage. Loyal consumers tend to repurchase products, recommend brands to others, and maintain long-term relationships with organizations. Therefore, understanding the factors that contribute to brand loyalty has become increasingly important for both scholars and practitioners.

Although previous studies have examined the relationships among artificial intelligence, trust, and consumer behavior, limited research has explored the impact of AI-supported corporate communication on brand loyalty while simultaneously considering the mediating role of digital trust and the moderating role of technology anxiety. Addressing this gap is particularly important as organizations continue to invest heavily in AI-driven communication systems.

Therefore, this study aims to examine the effect of AI-supported corporate communication on consumer brand loyalty. Furthermore, it investigates the mediating role of digital trust and the moderating effect of technology anxiety within this relationship. By integrating concepts from both communication and business disciplines, the study seeks to contribute to the growing literature on artificial intelligence, digital trust, technology anxiety, and consumer loyalty in the digital age. The rapid advancement of artificial intelligence technologies has significantly transformed corporate communication practices. Today, organizations increasingly utilize AI-supported applications in customer service, social media management, digital marketing, content creation, and stakeholder communication. While these technologies provide organizations with greater efficiency, cost advantages, and personalized communication opportunities, understanding how consumers perceive and respond to AI-supported communication remains an important research issue (Kaplan & Haenlein, 2019).

The growing use of AI-generated content has led consumers to question the credibility, authenticity, and transparency of information encountered in digital environments. As a result, trust has become a critical element of corporate communication strategies. Understanding how consumers' trust in AI-supported communication influences their loyalty toward brands has become increasingly important for both scholars and practitioners (Dwivedi et al., 2023).

Previous studies have emphasized the importance of digital trust in establishing long-term relationships between consumers and organizations. Digital trust refers to consumers' confidence in digital technologies, platforms, and communication processes. However, limited research has examined how AI-supported corporate communication contributes to the development of digital trust and how digital trust subsequently affects brand loyalty. This represents an important gap in the existing literature (Gefen, Karahanna, & Straub, 2003).

Furthermore, consumers differ considerably in their attitudes toward artificial intelligence technologies. While some individuals perceive AI as beneficial and innovative, others express concerns regarding privacy, security, ethical issues, and the potential loss of human control. These concerns are commonly referred to as technology anxiety. Individuals with higher levels of technology anxiety may respond differently to AI-supported communication practices than those with lower levels of anxiety. Despite its potential importance, the moderating role of technology anxiety in the relationship between AI-supported corporate communication and brand loyalty has not been sufficiently investigated. Within the context of the Turkish Republic of Northern Cyprus (TRNC), empirical studies examining the relationships among AI-supported corporate communication, digital trust, technology anxiety, and brand loyalty remain extremely limited. In particular, there is a lack of comprehensive research conducted among consumers living in the six districts of the TRNC, namely Nicosia, Famagusta, Kyrenia, Güzelyurt, İskele, and Lefke.

Therefore, the main problem addressed in this study is to determine the effect of AI-supported corporate communication on consumer brand loyalty, to examine the mediating role of digital trust in this relationship, and to investigate the moderating effect of technology anxiety.

Purpose of the Study

The primary purpose of this study is to examine the effect of AI-supported corporate communication on consumer brand loyalty. In addition, the study investigates the mediating role of digital trust in the relationship between AI-supported corporate communication and brand loyalty, as well as the moderating effect of technology anxiety.

The research focuses on consumers living in the six districts of the Turkish Republic of Northern Cyprus, namely Nicosia, Famagusta, Kyrenia, Güzelyurt, İskele, and Lefke. Accordingly, the study aims to determine how consumers

perceive AI-supported corporate communication practices and to reveal the role of digital trust in the development of brand loyalty while examining the impact of technology anxiety on this process.

Significance of the Study

Artificial intelligence technologies are increasingly being integrated into corporate communication activities. However, studies examining the impact of AI-supported communication practices on consumer brand loyalty remain limited. Investigating digital trust and technology anxiety within the same conceptual model makes this study particularly valuable in terms of its contribution to the literature. Another important aspect of the study is that it combines communication and business disciplines within a single framework. Examining AI-supported corporate communication, digital trust, technology anxiety, and brand loyalty together is expected to provide significant theoretical and practical contributions. Furthermore, conducting the study among consumers living in all six districts of the Turkish Republic of Northern Cyprus contributes to the regional literature by addressing an important research gap. The findings are expected to help organizations improve their AI-supported communication strategies, strengthen consumer trust, and foster long-term brand loyalty.

2. Theoretical Framework

2.1. AI-Supported Corporate Communication

The rapid development of artificial intelligence technologies has significantly transformed corporate communication practices. Organizations increasingly employ AI applications in customer relationship management, social media communication, content creation, crisis communication, and stakeholder engagement. AI-supported corporate communication refers to the integration of machine learning, natural language processing, predictive analytics, and generative AI technologies into organizational communication processes (Kaplan & Haenlein, 2019).

Through AI-supported communication systems, organizations can analyze consumer preferences more accurately, deliver personalized messages, and improve communication efficiency. Recent studies indicate that AI-driven communication strategies enhance customer engagement, improve consumer experiences, and strengthen relationships between brands and consumers (Dwivedi et al., 2023). As a result, AI has become a strategic tool for organizations seeking to establish sustainable competitive advantages in increasingly digital markets.

2.2. Digital Trust

Digital trust refers to consumers' confidence in digital platforms, technologies, online services, and communication processes. In digital environments, trust is considered a fundamental factor influencing consumers' willingness to interact with organizations and engage in long-term relationships (Gefen, Karahanna, & Straub, 2003). The growing use of AI-generated content has increased consumers' concerns regarding transparency, credibility, privacy, and ethical issues. Consequently, digital trust has become a critical determinant of consumers' acceptance of AI-supported communication systems. Consumers who trust digital technologies are more likely to perceive organizational communication positively and develop stronger relationships with brands (McKnight, Carter, Thatcher, & Clay, 2011).

2.3. Technology Anxiety

Technology anxiety is defined as the feelings of uncertainty, fear, or discomfort experienced by individuals when interacting with new technologies. With the widespread adoption of artificial intelligence, technology anxiety has emerged as a significant issue affecting technology acceptance and usage behavior. Consumers may experience concerns related to privacy violations, cybersecurity risks, algorithmic decision-making, ethical implications, and potential job displacement. Such concerns can negatively influence attitudes toward AI-supported communication systems (Venkatesh et al., 2003). Previous research has demonstrated that individuals with high levels of technology anxiety are generally more reluctant to adopt new technologies, whereas those with lower anxiety levels tend to embrace technological innovations more readily (Marangunić & Granić, 2015).

2.4. Brand Loyalty

Brand loyalty refers to consumers' commitment to repeatedly purchase and prefer a particular brand despite the availability of competing alternatives (Oliver, 1999). Brand loyalty is widely recognized as one of the most valuable assets for organizations because loyal customers contribute to long-term profitability, positive word-of-mouth communication, and customer retention.

In today's digital environment, consumers increasingly evaluate brands not only based on product quality but also on communication effectiveness. AI-supported communication enables organizations to provide personalized experiences, respond quickly to customer needs, and create meaningful interactions. These capabilities may significantly contribute to the development of brand loyalty (Huang & Rust, 2021).

2.5. Relationships Among AI-Supported Corporate Communication, Digital Trust, Technology Anxiety, and Brand Loyalty

Existing literature suggests that AI-supported communication practices positively influence consumers' perceptions of trust and satisfaction. By providing accurate, personalized, and timely information, AI-supported communication systems can strengthen digital trust and improve brand-consumer relationships (Gefen et al., 2003).

Digital trust, in turn, plays a critical role in the formation of brand loyalty. Consumers who trust a brand's communication processes are more likely to remain loyal and maintain long-term relationships with that brand (McKnight et al., 2011). Therefore, digital trust may function as a mediating mechanism through which AI-supported corporate communication influences brand loyalty.

However, the effectiveness of AI-supported communication may vary depending on consumers' levels of technology anxiety. Individuals with high technology anxiety may perceive AI applications more negatively, reducing the effectiveness of communication efforts. Conversely, individuals with lower levels of anxiety may respond more positively to AI-supported communication strategies. Therefore, technology anxiety is expected to moderate the relationship between AI-supported corporate communication and brand loyalty.

Accordingly, examining digital trust as a mediator and technology anxiety as a moderator provides a comprehensive framework for understanding how AI-supported corporate communication contributes to consumer brand loyalty in contemporary digital environments.

3. Research Hypotheses

Based on the theoretical framework and previous literature, the following hypotheses were developed:

H1: AI-supported corporate communication has a positive and significant effect on consumer brand loyalty.

H2: AI-supported corporate communication has a positive and significant effect on digital trust.

H3: Digital trust has a positive and significant effect on consumer brand loyalty.

H4: Digital trust mediates the relationship between AI-supported corporate communication and consumer brand loyalty.

H5: Technology anxiety moderates the relationship between AI-supported corporate communication and consumer brand loyalty.

H5a: The positive effect of AI-supported corporate communication on consumer brand loyalty is stronger among consumers with low levels of technology anxiety.

H5b: The positive effect of AI-supported corporate communication on consumer brand loyalty is weaker among consumers with high levels of technology anxiety.

3. Methodology

3.1. Research Model

This study employed a quantitative research design to examine the effect of AI-supported corporate communication on consumer brand loyalty. The study further investigated the mediating role of digital trust and the moderating effect of technology anxiety. A relational survey model was adopted to determine the relationships among the variables. The independent variable of the study was AI-supported corporate communication, the dependent variable was consumer brand loyalty, the mediating variable was digital trust, and the moderating variable was technology anxiety.

3.2. Population and Sample

The population of the study consisted of consumers residing in the six districts of the Turkish Republic of Northern Cyprus, namely Nicosia, Famagusta, Kyrenia, Güzelyurt, İskele, and Lefke. Simple random sampling was employed. Based on a 95% confidence level and a 5% margin of error, data were collected from 392 participants. After eliminating incomplete questionnaires, 381 valid questionnaires were included in the analyses.

3.3. Data Collection Instruments

Data were collected through a structured questionnaire consisting of five sections.

Demographic Information Form

Gender, age, educational level, district of residence, and daily internet usage duration.

AI-Supported Corporate Communication Scale

Adapted from recent studies examining AI-based communication practices and consumer perceptions.

Digital Trust Scale

Adapted from McKnight et al. (2011).

Technology Anxiety Scale

Adapted from Venkatesh et al. (2003) and Marangunić and Granić (2015).

Brand Loyalty Scale
Adapted from Oliver (1999). All items were measured using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

3.4. Data Collection Process

The data were collected through an online questionnaire between January and April 2026. Participation was voluntary and anonymous. Respondents were informed about the purpose of the study and assured that the collected information would be used solely for scientific purposes.

3.5. Data Analysis

The collected data were analyzed using SPSS 28 and AMOS 24.

4. Findings Section

Table 1. Demographic Characteristics of the Participants (n = 381)

Variable	Category	n	%
Gender	Female	216	56.7
	Male	165	43.3
Age	18–25	102	26.8
	26–35	118	31.0
	36–45	94	24.7
	46 and above	67	17.5
Education Level	High School	78	20.5
	Associate Degree	86	22.6
	Bachelor's Degree	154	40.4
	Graduate Degree	63	16.5
District	Nicosia	116	30.4
	Famagusta	79	20.7
	Kyrenia	71	18.6
	Güzelyurt	42	11.0
	İskele	40	10.5
	Lefke	33	8.7
Daily Internet Usage	1–3 Hours	45	11.8
	4–6 Hours	107	28.1
	7–9 Hours	124	32.5
	10 Hours and Above	105	27.6
Total		381	100.0

Table 1 presents the demographic characteristics of the participants included in the study. The findings indicate that 56.7% of the participants were female and 43.3% were male. The largest age group consisted of participants aged between 26 and 35 years (31.0%), followed by those aged 18–25 years (26.8%).

Regarding educational level, the majority of participants held a bachelor's degree (40.4%), while 16.5% possessed a graduate degree. In terms of geographical distribution, most respondents resided in Nicosia (30.4%), followed by Famagusta (20.7%) and Kyrenia (18.6%).

The results further revealed that a considerable proportion of participants spent a substantial amount of time online. Specifically, 60.1% of the respondents reported using the internet for seven hours or more per day. This finding suggests that the sample consisted of individuals who are highly engaged with digital technologies and online communication environments.

Table 2. Normality Analysis Results

Variables		Kolmogorov-Smirnov	p	Shapiro-Wilk	p	Skewness	Kurtosis
AI-Supported Communication	Corporate	.097	.000	.974	.001	-0.438	0.327
Digital Trust		.089	.002	.979	.003	-0.392	0.284
Technology Anxiety		.083	.004	.982	.005	0.417	-0.265
Brand Loyalty		.094	.001	.976	.002	-0.486	0.411

Interpretation of Table 2

Table 2 presents the normality analysis results of the research variables. Although the Kolmogorov-Smirnov and Shapiro-Wilk tests were significant ($p < .05$), the skewness and kurtosis values were within the acceptable range of ± 1 .

Therefore, the data were considered to be approximately normally distributed, and parametric statistical analyses were performed in the study.

Table 3. Reliability Analysis Results

Scale	Number of Items	Cronbach's Alpha
AI-Supported Corporate Communication	8	0.92
Digital Trust	6	0.89
Technology Anxiety	7	0.87
Brand Loyalty	6	0.91

Interpretation of Table 3

Table 3 presents the reliability analysis results of the scales used in the study. The Cronbach's Alpha coefficients ranged between 0.87 and 0.92. Since all reliability coefficients exceeded the recommended threshold of 0.70, the scales demonstrated a high level of internal consistency and reliability. Therefore, all measurement instruments were considered suitable for further statistical analyses.

Table 4. Confirmatory Factor Analysis (CFA) Fit Indices

Fit Index	Obtained Value	Acceptable Value
χ^2/df	2.36	< 5.00
CFI	0.95	≥ 0.90
TLI	0.94	≥ 0.90
IFI	0.95	≥ 0.90
GFI	0.92	≥ 0.90
RMSEA	0.060	≤ 0.08
SRMR	0.047	≤ 0.08

Interpretation of Table 4

Table 4 presents the results of the Confirmatory Factor Analysis. The fit indices indicated that the measurement model demonstrated an acceptable fit to the data. All fit values were within recommended thresholds, confirming the construct validity of the scales used in the study.

Table 5. Descriptive Statistics of the Research Variables

Variables	Minimum	Maximum	Mean	Standard Deviation
AI-Supported Corporate Communication	1.38	5.00	4.02	0.71
Digital Trust	1.42	5.00	3.89	0.68
Technology Anxiety	1.00	5.00	2.84	0.79
Brand Loyalty	1.25	5.00	4.08	0.73

Interpretation of Table 5

Table 5 presents the descriptive statistics of the research variables. The findings indicate that participants reported relatively high levels of AI-supported corporate communication ($M = 4.02$), digital trust ($M = 3.89$), and brand loyalty ($M = 4.08$). In contrast, technology anxiety was found to be at a moderate level ($M = 2.84$). Overall, the results suggest that participants generally held positive perceptions toward AI-supported communication and demonstrated strong loyalty toward brands.

Table 6. Comparison of AI-Supported Corporate Communication, Digital Trust, Technology Anxiety, and Brand Loyalty by Gender

Variables	Female (n=216) Mean	Male (n=165) Mean	t	p
AI-Supported Corporate Communication	4.12	3.89	3.264	.001
Digital Trust	3.97	3.78	2.488	.013
Technology Anxiety	2.79	2.91	-1.562	.119
Brand Loyalty	4.17	3.96	3.821	.000

Interpretation of Table 6

Table 6 compares the research variables according to gender. Significant differences were found in AI-supported corporate communication, digital trust, and brand loyalty ($p < .05$). Female participants reported higher mean scores than male participants. However, no significant gender difference was observed for technology anxiety ($p > .05$).

Table 7. Comparison of AI-Supported Corporate Communication, Digital Trust, Technology Anxiety, and Brand Loyalty by Age Groups

Variables		18–25 Mean	26–35 Mean	36–45 Mean	46+ Mean	F	p
AI-Supported Corporate Communication	Corporate	3.78	3.96	4.09	4.21	5.874	.001
Digital Trust		3.71	3.85	3.97	4.11	4.692	.003
Technology Anxiety		3.12	2.93	2.68	2.47	6.241	.000
Brand Loyalty		3.84	4.01	4.12	4.28	5.438	.001

Interpretation of Table 7

Table 7 shows significant differences among age groups regarding AI-supported corporate communication, digital trust, technology anxiety, and brand loyalty ($p < .05$). Older participants reported higher levels of digital trust and brand loyalty, whereas younger participants exhibited higher levels of technology anxiety.

Table 8. Comparison of AI-Supported Corporate Communication, Digital Trust, Technology Anxiety, and Brand Loyalty by District

Variables		Nicosia	Famagusta	Kyrenia	Güzelyurt	İskele	Lefke	F	p
AI-Supported Corporate Communication	Corporate	4.18	4.06	3.97	3.84	3.79	3.73	4.821	.001
Digital Trust		4.02	3.94	3.86	3.75	3.72	3.69	3.996	.002
Technology Anxiety		2.65	2.77	2.88	2.97	3.05	3.12	3.728	.003
Brand Loyalty		4.22	4.10	4.03	3.92	3.89	3.84	4.376	.001

Interpretation of Table 8

Table 8 indicates significant differences across districts in all research variables ($p < .05$). Participants living in Nicosia and Famagusta reported higher levels of AI-supported corporate communication, digital trust, and brand loyalty. Technology anxiety was relatively higher among participants residing in Lefke and İskele.

Table 9. Comparison of AI-Supported Corporate Communication, Digital Trust, Technology Anxiety, and Brand Loyalty by Daily Internet Usage

Variables		1–3 Hours	4–6 Hours	7–9 Hours	10+ Hours	F	p
AI-Supported Corporate Communication		3.41	3.82	4.11	4.29	8.146	.000
Digital Trust		3.38	3.74	4.01	4.16	6.273	.000
Technology Anxiety		3.22	2.98	2.73	2.49	7.115	.000
Brand Loyalty		3.56	3.88	4.14	4.31	7.524	.000

Interpretation of Table 9

Table 9 demonstrates that daily internet usage significantly influences all research variables ($p < .001$). Participants with higher internet usage reported stronger perceptions of AI-supported corporate communication, higher digital trust, and greater brand loyalty. Conversely, technology anxiety decreased as internet usage increased.

Table 10. Correlation Analysis Results

Variables	1	2	3	4
1. AI-Supported Corporate Communication	1			
2. Digital Trust	.642**	1		
3. Technology Anxiety	-.318**	-.356**	1	
4. Brand Loyalty	.691**	.715**	-.284**	1

$p < .01$

Interpretation of Table 10

Table 10 presents the correlation coefficients among the research variables. AI-supported corporate communication was positively correlated with digital trust ($r = .642$, $p < .01$) and brand loyalty ($r = .691$, $p < .01$). Digital trust also showed a strong positive relationship with brand loyalty ($r = .715$, $p < .01$). Technology anxiety was negatively related to all other variables.

Table 11. Regression Analysis Results

Independent Variable	Dependent Variable	β	t	p
AI-Supported Corporate Communication	Brand Loyalty	.691	15.842	.000

AI-Supported Corporate Communication	Digital Trust	.642	13.991	.000
Digital Trust	Brand Loyalty	.715	17.284	.000

Interpretation of Table 11

The regression results indicate that AI-supported corporate communication significantly predicts brand loyalty ($\beta=.691$, $p<.001$) and digital trust ($\beta=.642$, $p<.001$). Furthermore, digital trust significantly predicts brand loyalty ($\beta=.715$, $p<.001$). Therefore, H1, H2, and H3 were supported.

Table 12. Mediation Analysis Results (Digital Trust)

Path	β	p
AI-Supported Corporate Communication → Digital Trust	.642	.000
Digital Trust → Brand Loyalty	.517	.000
AI-Supported Corporate Communication → Brand Loyalty (Direct Effect)	.359	.000
Indirect Effect	.332	.000

Interpretation of Table 12

The mediation analysis revealed that digital trust significantly mediated the relationship between AI-supported corporate communication and brand loyalty. The indirect effect was statistically significant ($\beta=.332$, $p<.001$), indicating partial mediation. Accordingly, H4 was supported.

Table 13. Moderation Analysis Results (Technology Anxiety)

Variable	β	t	p
AI-Supported Corporate Communication	.584	12.416	.000
Technology Anxiety	-.213	-4.295	.000
AI-Supported Corporate Communication × Technology Anxiety	-.168	-3.846	.000

Interpretation of Table 13

The interaction effect between AI-supported corporate communication and technology anxiety was found to be statistically significant ($\beta=-.168$, $p<.001$). The findings indicate that technology anxiety weakens the positive effect of AI-supported corporate communication on brand loyalty. Therefore, H5 was supported.

Table 14. Hypothesis Testing Results

Hypothesis	Statement	Result
H1	AI-supported corporate communication positively affects brand loyalty.	Supported
H2	AI-supported corporate communication positively affects digital trust.	Supported
H3	Digital trust positively affects brand loyalty.	Supported
H4	Digital trust mediates the relationship between AI-supported corporate communication and brand loyalty.	Supported
H5	Technology anxiety moderates the relationship between AI-supported corporate communication and brand loyalty.	Supported

Interpretation of Table 14

The results demonstrated that all proposed hypotheses were supported. AI-supported corporate communication directly enhanced both digital trust and brand loyalty. Digital trust partially mediated this relationship, while technology anxiety significantly moderated the strength of the relationship between AI-supported corporate communication and brand loyalty.

Discussion

The primary objective of this study was to examine the effect of AI-supported corporate communication on consumer brand loyalty while investigating the mediating role of digital trust and the moderating effect of technology anxiety. The findings revealed that AI-supported corporate communication significantly and positively affects both digital trust and brand loyalty. These results suggest that organizations utilizing artificial intelligence technologies in their communication strategies can strengthen relationships with consumers and increase long-term loyalty.

One of the most important findings of the study is the positive effect of AI-supported corporate communication on digital trust. This result indicates that consumers perceive AI-driven communication systems as beneficial when they provide accurate, personalized, and timely information. The finding is consistent with previous studies emphasizing that trust plays a crucial role in technology-enabled communication environments (Gefen et al., 2003; McKnight et al., 2011). As AI applications become increasingly integrated into corporate communication processes, consumers appear more willing to trust brands that effectively utilize these technologies.

The study also found a significant positive relationship between AI-supported corporate communication and brand loyalty. This finding supports the argument that personalized and interactive communication practices enhance consumers' emotional attachment and commitment to brands. Similar results have been reported by Huang and Rust (2021), who suggested that artificial intelligence enables organizations to create more meaningful customer experiences, ultimately contributing to stronger brand loyalty.

Another important result concerns the role of digital trust in explaining the relationship between AI-supported corporate communication and brand loyalty. The mediation analysis demonstrated that digital trust partially mediates this relationship. In other words, AI-supported communication not only directly influences brand loyalty but also indirectly affects loyalty by increasing consumers' trust in digital communication processes. This finding confirms that trust remains a central mechanism through which organizations build sustainable consumer relationships in digital environments.

The moderation analysis revealed that technology anxiety significantly influences the effectiveness of AI-supported corporate communication. Consumers with high levels of technology anxiety were less likely to develop brand loyalty through AI-supported communication practices. This result suggests that concerns regarding privacy, security, algorithmic decision-making, and technological complexity may reduce the positive impact of AI-based communication efforts. The finding is consistent with the Technology Acceptance Model and related literature emphasizing the importance of perceived risks and psychological barriers in technology adoption (Venkatesh et al., 2003; Marangunić & Granić, 2015).

Furthermore, demographic analyses indicated that participants with higher levels of internet usage reported greater digital trust and stronger brand loyalty. This finding suggests that familiarity with digital technologies may facilitate the acceptance of AI-supported communication systems. Similarly, participants from more digitally developed districts demonstrated more favorable attitudes toward AI-supported communication, indicating that technological infrastructure and digital experience may influence consumer perceptions.

Overall, the findings demonstrate that AI-supported corporate communication has become an important strategic tool for organizations operating in increasingly digital markets. However, the effectiveness of such communication practices largely depends on consumers' trust in digital systems and their levels of technology anxiety. Therefore, organizations should focus not only on implementing AI technologies but also on enhancing transparency, credibility, and ethical standards to foster consumer trust and loyalty.

The study contributes to the existing literature by integrating communication and business perspectives within a single framework. Moreover, it provides empirical evidence from the Turkish Republic of Northern Cyprus, a context that has received limited attention in previous research. The findings are expected to contribute to future studies examining artificial intelligence, digital trust, technology acceptance, and consumer behavior.

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THE IMPACT OF AI-POWERED SUSTAINABILITY COMMUNICATION ON CONSUMERS' GREEN PURCHASE INTENTIONS: THE MEDIATING ROLE OF BRAND TRUST AND THE MODERATING EFFECT OF DIGITAL LITERACY

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ABSTRACT

The primary aim of this study is to examine the effect of artificial intelligence (AI)-supported sustainability communication on consumers' green purchase intention and to investigate the mediating role of brand trust and the moderating effect of digital literacy in this relationship. The study was conducted among consumers aged 18 and above residing in the six districts of the Turkish Republic of Northern Cyprus (TRNC), namely Nicosia, Famagusta, Kyrenia, Güzelyurt, İskele, and Lefke. A quantitative research approach was adopted, and the relational survey model was employed. Data were collected through an online questionnaire from 381 participants selected using a simple random sampling method. The study utilized the AI-Supported Sustainability Communication Scale, Brand Trust Scale, Digital Literacy Scale, and Green Purchase Intention Scale. The collected data were analyzed using SPSS 28.00 and AMOS 24 software. Reliability analysis, confirmatory factor analysis, correlation analysis, regression analysis, and structural equation modeling were conducted. The findings revealed that AI-supported sustainability communication positively and significantly affects both consumers' green purchase intention and brand trust. Furthermore, brand trust was found to have a significant positive effect on green purchase intention. Structural equation modeling results demonstrated that brand trust mediates the relationship between AI-supported sustainability communication and green purchase intention. In addition, digital literacy was found to significantly moderate the relationship between AI-supported sustainability communication and green purchase intention. The results suggest that investments in AI-supported sustainability communication strategies can encourage environmentally responsible purchasing behavior and strengthen consumer trust in brands. The study contributes to the literature on sustainable marketing, digital communication, and consumer behavior by providing empirical evidence from the TRNC context.

Keywords: Artificial Intelligence, Sustainability Communication, Brand Trust, Digital Literacy, Green Purchase Intention.

Introduction

With the acceleration of digital transformation, the communication processes established between businesses and consumers have undergone significant changes. In particular, the integration of artificial intelligence (AI) technologies into marketing activities has enabled organizations to communicate with their target audiences in a faster, more personalized, and interaction-oriented manner. Today, AI-supported applications such as data analytics, recommendation systems, chatbots, and personalized content generation play a crucial role in shaping consumer behavior. These developments have also encouraged businesses to redesign their sustainability-oriented communication strategies (Davenport, Guha, Grewal, & Bressgott, 2020).

In recent years, sustainability has evolved beyond environmental responsibility and has become one of the fundamental components of corporate strategy. Climate change, the depletion of natural resources, and the growing public awareness of environmental issues have led consumers to place greater importance on sustainability criteria in their purchasing decisions. Consequently, businesses have increasingly utilized digital communication channels to effectively convey their sustainability initiatives and commitments to consumers (Kotler, Kartajaya, & Setiawan, 2021).

AI-supported sustainability communication enables organizations to present their environmental and social responsibility initiatives in a more effective, transparent, and personalized manner. Through AI-based systems, consumers can receive sustainability-related information tailored to their interests, gain access to real-time environmental impact data, and increase their awareness of sustainable products and services. As a result, AI-supported sustainability communication not only enhances communication effectiveness but also influences consumer attitudes and behavioral intentions (Huang & Rust, 2021).

One of the most important factors influencing the success of sustainability communication is brand trust. Consumers are more likely to be influenced by sustainability messages when they believe that the information provided by

companies is accurate, reliable, and sincere. The widespread discussion of greenwashing practices has made consumers increasingly cautious about sustainability claims. Therefore, brand trust is considered a critical variable in explaining the relationship between sustainability communication and consumer behavior (Delmas & Burbano, 2011).

Another key concept in understanding sustainable consumer behavior is green purchase intention. Green purchase intention refers to an individual's willingness and tendency to purchase environmentally friendly products and services. Previous studies have demonstrated that effective sustainability communication positively influences consumers' intentions to engage in green purchasing behaviors (Chen & Chang, 2013). However, the strength of this relationship may vary among individuals depending on their personal characteristics and competencies.

At this point, digital literacy emerges as an important factor. Digital literacy refers to an individual's ability to access, evaluate, understand, and effectively use digital technologies and information. Consumers with higher levels of digital literacy are expected to better interpret AI-supported sustainability messages and develop more informed attitudes toward environmentally responsible products and services. Consequently, digital literacy may strengthen the influence of AI-supported sustainability communication on green purchase intention (Van Deursen & Van Dijk, 2014).

A review of the literature indicates that studies simultaneously examining artificial intelligence, sustainability communication, brand trust, digital literacy, and green purchase intention remain limited. Moreover, research focusing on these relationships within the context of the Turkish Republic of Northern Cyprus (TRNC) is particularly scarce. Considering the growing importance of sustainability and digital technologies, there is a need for empirical studies investigating how AI-supported sustainability communication affects consumers' green purchasing decisions.

Therefore, this study aims to examine the effect of AI-supported sustainability communication on consumers' green purchase intention while investigating the mediating role of brand trust and the moderating effect of digital literacy. Conducted in the six districts of the Turkish Republic of Northern Cyprus, the study is expected to contribute to the literature on sustainable marketing, digital communication, and consumer behavior by providing both theoretical and practical insights. Sustainability has become one of the most important strategic priorities for businesses worldwide. Growing environmental concerns, climate change, resource depletion, and increasing consumer awareness have encouraged organizations to integrate sustainability into their corporate strategies and communication activities. As a result, companies are increasingly utilizing digital technologies to communicate their environmental and social responsibility initiatives to consumers. In this context, artificial intelligence (AI) has emerged as a powerful tool that enables organizations to deliver sustainability-related messages in a more personalized, interactive, and efficient manner (Huang & Rust, 2021).

AI-supported sustainability communication allows businesses to analyze consumer preferences, generate customized sustainability content, and enhance consumer engagement through digital platforms. These capabilities have the potential to influence consumers' perceptions, attitudes, and purchasing decisions regarding environmentally friendly products and services. However, despite the growing adoption of AI technologies in marketing communication, there is still limited empirical evidence regarding how AI-supported sustainability communication affects consumers' green purchase intentions (Dwivedi et al., 2023).

Another important issue concerns the credibility of sustainability-related messages. The increasing prevalence of greenwashing practices has led consumers to become more skeptical about environmental claims made by organizations. Consequently, brand trust has become a critical factor influencing whether consumers perceive sustainability communication as credible and whether they are willing to support environmentally responsible brands through their purchasing behavior (Chen & Chang, 2013).

Furthermore, consumers differ in their ability to access, evaluate, and interpret digital information. Digital literacy has therefore become an important variable in determining how consumers process AI-generated sustainability messages. Individuals with higher levels of digital literacy are expected to evaluate digital sustainability content more critically and effectively, which may strengthen or weaken the relationship between AI-supported sustainability communication and green purchase intention (UNESCO, 2023).

Within the context of the Turkish Republic of Northern Cyprus (TRNC), research examining sustainable consumption and digital communication has remained relatively limited. More specifically, no comprehensive study has simultaneously investigated the relationships among AI-supported sustainability communication, brand trust, digital literacy, and green purchase intention among consumers living in the six districts of the TRNC. This represents an important gap in both the sustainability communication and consumer behavior literature.

Therefore, the primary problem addressed in this study is to determine whether AI-supported sustainability communication influences consumers' green purchase intentions in the TRNC, whether brand trust mediates this relationship, and whether digital literacy moderates the relationship between AI-supported sustainability communication and green purchase intention.

Purpose of the Study

The primary purpose of this study was to examine the effect of artificial intelligence-supported sustainability communication on consumers' green purchase intention. In addition, the mediating role of brand trust and the moderating effect of digital literacy in the relationship between AI-supported sustainability communication and green purchase intention were investigated.

The study was conducted among consumers living in the six districts of the Turkish Republic of Northern Cyprus, namely Nicosia, Famagusta, Kyrenia, Güzelyurt, İskele, and Lefke. Accordingly, the research aimed to reveal the extent to which consumers' perceptions of AI-supported sustainability communication influenced their green purchase intentions.

Significance of the Study

This study is important because it examined AI-supported sustainability communication, brand trust, digital literacy, and green purchase intention within a single conceptual model. The findings obtained from the study are expected to contribute to the literature on sustainable marketing, digital communication, and consumer behavior.

Another significant contribution of the study is that it was conducted among consumers living in all six districts of the Turkish Republic of Northern Cyprus. In this respect, the research filled an important gap in the regional literature and provided up-to-date empirical evidence regarding the effects of AI-supported sustainability communication on consumer behavior.

The findings are also considered valuable for businesses seeking to improve their sustainability communication strategies, strengthen brand trust, and encourage environmentally responsible purchasing behavior among consumers.

2. Theoretical Framework

2.1. Artificial Intelligence-Supported Sustainability Communication

The rapid advancement of digital technologies has led to significant transformations in the communication processes established between businesses and their stakeholders. In particular, the integration of artificial intelligence technologies into communication and marketing activities has enabled organizations to communicate with their target audiences in a faster, more personalized, and interaction-oriented manner. Through data analytics, machine learning, natural language processing, and predictive systems, artificial intelligence can identify consumer needs and generate content tailored to those needs (Kaplan & Haenlein, 2019).

Sustainability communication refers to the process through which organizations communicate their environmental, economic, and social responsibility activities to stakeholders. Increasing environmental problems, climate change, resource depletion, and sustainable development goals have encouraged organizations to make their sustainability initiatives more visible. In this process, artificial intelligence technologies have emerged as important tools for enhancing the effectiveness of sustainability communication (Kuşat, 2013).

Artificial intelligence-supported sustainability communication enables organizations to deliver sustainability messages to the right audience, increase communication effectiveness, and provide consumers with personalized environmentally friendly product recommendations. Furthermore, AI technologies contribute to raising consumer awareness regarding sustainability issues by providing customized content and real-time information (Dwivedi et al., 2023).

Today, organizations increasingly utilize social media platforms, corporate websites, and AI-supported customer communication systems to disseminate sustainability-related information. As a result, AI-supported sustainability communication has become an important factor influencing consumer perceptions and behaviors.

2.2. Green Purchase Intention

Green purchase intention refers to consumers' willingness and tendency to purchase environmentally friendly products and services. Growing environmental concerns and increasing awareness of sustainability have encouraged consumers to consider environmental factors in their purchasing decisions rather than focusing solely on economic benefits (Ay & Ecevit, 2005).

Green purchase intention is considered one of the key indicators of sustainable consumption behavior. Consumers' preferences for environmentally friendly products are influenced by several factors, including environmental awareness, environmental attitudes, social responsibility perceptions, and trust in organizations (Chen & Chang, 2013). Effective sustainability communication plays a crucial role in increasing consumers' awareness of environmentally responsible products and services. Through AI-supported communication systems, consumers can easily access sustainability-related information, compare environmentally friendly alternatives, and make more informed purchasing decisions. Consequently, AI-supported sustainability communication is expected to positively influence green purchase intention.

2.3. Brand Trust

Brand trust refers to consumers' confidence that a brand is reliable, honest, and capable of fulfilling its promises (Delgado-Ballester, 2004). In today's highly competitive marketplace, brand trust is considered one of the most important determinants of long-term customer relationships.

Trust becomes even more critical in the context of sustainability communication. Consumers often question the credibility of environmental claims and evaluate whether organizations are genuinely committed to sustainable practices. The increasing prevalence of greenwashing has made consumers more skeptical about sustainability-related messages (Delmas & Burbano, 2011).

Previous studies have demonstrated that consumers are more likely to support and purchase products from brands they trust. Therefore, brand trust is expected to play a mediating role in the relationship between AI-supported sustainability communication and green purchase intention.

2.4. Digital Literacy

Digital literacy refers to an individual's ability to effectively use digital technologies, evaluate digital content, and critically analyze information obtained from digital environments (Ng, 2012). As digital technologies continue to penetrate everyday life, digital literacy has become a fundamental competency for modern consumers.

The widespread adoption of artificial intelligence-supported communication tools has increased the importance of digital literacy. Consumers with higher levels of digital literacy are generally more capable of evaluating AI-generated sustainability messages, verifying information sources, and interpreting digital content accurately (UNESCO, 2023).

As a result, digital literacy may influence the extent to which consumers are affected by AI-supported sustainability communication. Consumers with higher digital literacy skills may process sustainability-related information differently, thereby affecting their purchasing intentions and behaviors.

2.5. Relationships Among Artificial Intelligence-Supported Sustainability Communication, Brand Trust, Digital Literacy, and Green Purchase Intention

Previous studies have identified a positive relationship between sustainability communication and green purchase intention. Providing consumers with information regarding environmental responsibility and sustainability initiatives increases their willingness to purchase environmentally friendly products and services (Testa, Sarti, & Frey, 2021).

In addition, brand trust has been identified as one of the most important determinants of sustainable consumer behavior. Consumers tend to believe sustainability claims made by trustworthy brands and are more likely to support such organizations through their purchasing decisions (Chen & Chang, 2013).

Digital literacy is also considered an important factor influencing consumers' responses to AI-supported sustainability communication. Individuals with higher levels of digital literacy are more capable of evaluating digital content and assessing the credibility of sustainability-related information. Therefore, digital literacy may strengthen or weaken the relationship between AI-supported sustainability communication and green purchase intention.

Based on the existing literature, it is expected that AI-supported sustainability communication positively influences green purchase intention, brand trust mediates this relationship, and digital literacy moderates the relationship between AI-supported sustainability communication and green purchase intention.

Research Hypotheses

H1: Artificial intelligence-supported sustainability communication positively affects consumers' green purchase intention.

H2: Artificial intelligence-supported sustainability communication positively affects brand trust.

H3: Brand trust positively affects consumers' green purchase intention.

H4: Brand trust mediates the relationship between artificial intelligence-supported sustainability communication and green purchase intention.

H5: Digital literacy moderates the relationship between artificial intelligence-supported sustainability communication and green purchase intention.

3. Methodology

3.1. Research Model

This study examined the effect of artificial intelligence-supported sustainability communication on consumers' green purchase intention while investigating the mediating role of brand trust and the moderating effect of digital literacy. A quantitative research approach was adopted, and the relational survey model was employed. The relational survey model enables researchers to determine the direction and strength of relationships among two or more variables (Karasar, 2020).

In the research model, artificial intelligence-supported sustainability communication was considered the independent variable, green purchase intention the dependent variable, brand trust the mediating variable, and digital literacy the moderating variable.

3.2. Population and Sample

The population of the study consisted of consumers aged 18 and above living in the six districts of the Turkish Republic of Northern Cyprus (TRNC), namely Nicosia, Famagusta, Kyrenia, Güzelyurt, İskele, and Lefke.

A simple random sampling method was employed. Considering a 95% confidence level and a 5% margin of error, data were collected from 392 participants. After excluding incomplete and invalid questionnaires, a total of 381 questionnaires were deemed suitable for analysis.

3.3. Data Collection Instruments

The research data were collected using a questionnaire consisting of five sections.

Demographic Information Form

This section included questions regarding participants' gender, age, educational level, district of residence, and daily internet usage duration.

Artificial Intelligence-Supported Sustainability Communication Scale

This scale was used to measure participants' perceptions of businesses' AI-supported sustainability communication activities.

Brand Trust Scale

Brand trust was measured using the scale developed by Delgado-Ballester (2004), which evaluates consumers' trust toward brands.

Digital Literacy Scale

Digital literacy was measured using the scale developed by Ng (2012), which assesses individuals' ability to use, evaluate, and interpret digital technologies and information.

Green Purchase Intention Scale

Green purchase intention was measured using the scale developed by Chen and Chang (2013), which evaluates consumers' intentions to purchase environmentally friendly products and services.

All items were measured using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

3.4. Data Collection Process

The research data were collected through an online survey administered to consumers residing in Nicosia, Famagusta, Kyrenia, Güzelyurt, İskele, and Lefke. The data collection process was conducted between January and March 2026. Participants were informed about the purpose of the study, and their participation was entirely voluntary. They were also assured that all information would remain confidential and would be used solely for scientific purposes. Ethical research principles were followed throughout the study (Büyüköztürk et al., 2022).

3.5. Data Analysis

The collected data were analyzed using SPSS 28.00 and AMOS 24 statistical software packages. Initially, missing data and outlier analyses were conducted. Subsequently, the normality of the data was assessed through Kolmogorov-Smirnov and Shapiro-Wilk tests, as well as skewness and kurtosis values.

The reliability of the measurement scales was evaluated using Cronbach's Alpha coefficients. Confirmatory Factor Analysis (CFA) was conducted to assess the construct validity of the scales.

Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated to summarize the data. Independent samples t-tests and one-way analysis of variance (ANOVA) were employed to examine differences across demographic variables.

Pearson correlation and regression analyses were performed to investigate relationships among the variables. Furthermore, the mediating role of brand trust and the moderating effect of digital literacy were tested using Structural Equation Modeling (SEM) through the AMOS software package. Statistical significance was evaluated at the $p < .05$ level.

Method

Table 1. Demographic Characteristics of the Participants (n = 381)

Variable	Group	n	%
Gender	Female	214	56.2
	Male	167	43.8

Age	18–25	96	25.2
	26–35	121	31.8
	36–45	98	25.7
	46 and above	66	17.3
Educational Level	High School	72	18.9
	Associate Degree	84	22.0
	Bachelor's Degree	161	42.3
	Graduate Degree	64	16.8
District	Nicosia	114	29.9
	Famagusta	83	21.8
	Kyrenia	72	18.9
	Güzelyurt	42	11.0
	İskele	39	10.2
	Lefke	31	8.1
Daily Internet Usage	1–3 Hours	48	12.6
	4–6 Hours	103	27.0
	7–9 Hours	126	33.1
	10 Hours and Above	104	27.3
Total		381	100.0

As shown in Table 1, 56.2% of the participants were female and 43.8% were male. The majority of the participants were between the ages of 26 and 35 (31.8%). Regarding educational level, most participants held a bachelor's degree (42.3%). In terms of geographical distribution, the highest proportions of participants resided in Nicosia (29.9%) and Famagusta (21.8%). Furthermore, 60.4% of the participants reported using the internet for seven hours or more per day. This finding indicates that the sample consisted of individuals who are highly engaged with digital technologies and online environments.

Table 2. Normality Analysis Results

Variables		Kolmogorov-Smirnov	p	Shapiro-Wilk	p	Skewness	Kurtosis
AI-Supported Communication	Sustainability	0.108	0.000	0.971	0.000	-0.521	0.384
Brand Trust		0.094	0.001	0.976	0.002	-0.438	0.276
Digital Literacy		0.087	0.003	0.981	0.004	-0.392	0.451
Green Purchase Intention		0.102	0.000	0.973	0.001	-0.467	0.318

Table 2 presents the normality analysis results for the research variables. The Kolmogorov-Smirnov and Shapiro-Wilk tests produced significance values below .05 for all variables. However, since the sample size consisted of 381 participants, these tests are known to be highly sensitive in large samples. The skewness and kurtosis values for all variables were found to be within the acceptable range of ± 1 . Therefore, the data were considered approximately normally distributed, and parametric statistical analyses were conducted in the study.

Table 3. Reliability Analysis Results

Scale	Number of Items	Cronbach's Alpha
AI-Supported Sustainability Communication Scale	8	0.91
Brand Trust Scale	6	0.88
Digital Literacy Scale	8	0.90
Green Purchase Intention Scale	5	0.86

Interpretation of Table 3

Cronbach's Alpha coefficients were calculated to determine the reliability of the scales used in the study. The results revealed that the Cronbach's Alpha values were 0.91 for the AI-Supported Sustainability Communication Scale, 0.88 for the Brand Trust Scale, 0.90 for the Digital Literacy Scale, and 0.86 for the Green Purchase Intention Scale. Since all Cronbach's Alpha coefficients exceeded the recommended threshold of 0.80, the findings indicate that all scales demonstrated a high level of reliability and internal consistency.

Table 4. Descriptive Statistics of the Research Variables

Variables	Minimum	Maximum	Mean	Standard Deviation
AI-Supported Sustainability Communication	1.25	5.00	3.98	0.74
Brand Trust	1.40	5.00	3.87	0.69
Digital Literacy	1.75	5.00	4.12	0.63
Green Purchase Intention	1.20	5.00	4.05	0.71

Table 4 presents the descriptive statistics of the variables examined in the study. The findings indicate that participants reported above-average perceptions regarding AI-Supported Sustainability Communication ($M=3.98$). This result suggests that participants generally viewed businesses' AI-supported sustainability communication practices positively. The mean score for Brand Trust was found to be 3.87, indicating a favorable level of trust toward brands engaged in sustainability-related activities. Digital Literacy had the highest mean score among all variables ($M=4.12$), demonstrating that participants possessed a relatively high level of competence in using digital technologies and evaluating digital content.

The mean score for Green Purchase Intention was calculated as 4.05, suggesting that participants exhibited a strong tendency to purchase environmentally friendly products and services. Overall, the findings reveal that all research variables were perceived at relatively high levels by the participants.

Table 5. Comparison of AI-Supported Sustainability Communication, Brand Trust, Digital Literacy, and Green Purchase Intention by Gender

Variables	Gender	n	Mean	SD	t	p
AI-Supported Sustainability Communication	Female	214	4.08	0.68	3.214	0.001
	Male	167	3.86	0.79		
Brand Trust	Female	214	3.95	0.64	2.487	0.013
	Male	167	3.77	0.72		
Digital Literacy	Female	214	4.15	0.61	1.428	0.154
	Male	167	4.07	0.66		
Green Purchase Intention	Female	214	4.18	0.65	4.126	0.000
	Male	167	3.89	0.74		

Table 5 compares participants' levels of AI-supported sustainability communication, brand trust, digital literacy, and green purchase intention according to gender. The findings revealed a statistically significant difference in perceptions of AI-supported sustainability communication between female and male participants ($t=3.214$, $p=0.001$). Female participants reported higher perceptions than male participants.

A significant gender difference was also found for brand trust ($t=2.487$, $p=0.013$), with female participants demonstrating higher levels of trust toward brands. However, no statistically significant difference was observed in digital literacy levels according to gender ($t=1.428$, $p=0.154$). This finding suggests that female and male participants possessed similar levels of digital literacy. Regarding green purchase intention, a significant difference was identified between female and male participants ($t=4.126$, $p<0.001$). Female participants exhibited stronger intentions to purchase environmentally friendly products and services compared to male participants.

Table 6. Comparison of AI-Supported Sustainability Communication, Brand Trust, Digital Literacy, and Green Purchase Intention by Age Groups

Variables	18–25 Mean	26–35 Mean	36–45 Mean	46+ Mean	F	p
AI-Supported Sustainability Communication	3.76	3.95	4.07	4.18	5.842	0.001
Brand Trust	3.69	3.84	3.96	4.08	4.317	0.005
Digital Literacy	3.91	4.06	4.18	4.25	6.294	0.000
Green Purchase Intention	3.82	3.97	4.11	4.24	5.628	0.001

Table 6 compares the research variables according to age groups. Significant differences were found among age groups in AI-supported sustainability communication, brand trust, digital literacy, and green purchase intention ($p<0.05$). The findings indicate that mean scores generally increased with age, with the highest scores observed among participants aged 46 and above.

Discussion

This study examined the effect of artificial intelligence-supported sustainability communication on consumers' green purchase intention and investigated the mediating role of brand trust and the moderating effect of digital literacy. The findings revealed that AI-supported sustainability communication had a significant and positive effect on green purchase intention. This result indicates that delivering sustainability-related messages through AI-supported digital platforms encourages consumers to engage in environmentally responsible purchasing behaviors. This finding is consistent with the study conducted by Chen and Chang (2013), which emphasized the positive impact of sustainability communication on consumer behavior.

The results further demonstrated that AI-supported sustainability communication positively influenced brand trust. Consumers appeared to place greater trust in brands that communicated their sustainability initiatives effectively and transparently. This finding supports previous studies suggesting that sustainability communication strengthens consumer trust in brands (Delgado-Ballester, 2004; Erdem & Swait, 2004).

The study also found that brand trust had a significant positive effect on green purchase intention. Consumers who trusted a brand were more willing to purchase environmentally friendly products and services offered by that brand. This finding is in line with previous research highlighting the importance of trust in shaping consumer attitudes and purchasing decisions (Chen & Chang, 2013; Testa, Sarti, & Frey, 2021).

One of the most important findings of the study was the mediating role of brand trust in the relationship between AI-supported sustainability communication and green purchase intention. The results suggest that sustainability communication not only directly influences consumers' purchasing intentions but also indirectly affects them by increasing trust in the brand. In other words, as consumers perceive sustainability-related messages as credible and trustworthy, their intention to purchase environmentally friendly products increases.

Another significant finding was the moderating effect of digital literacy. Individuals with higher levels of digital literacy were found to be more responsive to AI-supported sustainability communication. This result suggests that digital competencies enhance consumers' ability to evaluate and understand sustainability-related information delivered through AI technologies. The finding is consistent with the digital literacy framework proposed by UNESCO (2023).

Overall, the findings indicate that AI-supported sustainability communication serves as an important mechanism for promoting green purchasing behavior among consumers. Strengthening brand trust and improving digital literacy levels appear to be critical factors in increasing the effectiveness of sustainability communication strategies. Since the study was conducted among consumers living in the six districts of the Turkish Republic of Northern Cyprus, the findings are expected to contribute to both the regional and international literature on sustainability communication, consumer behavior, and digital marketing.

Conclusion And Recommendations

The findings of this study revealed that AI-supported sustainability communication positively influences consumers' green purchase intention and brand trust. Furthermore, brand trust was found to have a significant positive effect on green purchase intention. The results also demonstrated that brand trust plays a mediating role in the relationship between AI-supported sustainability communication and green purchase intention, while digital literacy acts as a significant moderating variable.

Overall, the study suggests that organizations can encourage environmentally responsible purchasing behavior by investing in AI-supported sustainability communication strategies. Strengthening brand trust and improving consumers' digital literacy levels may further enhance the effectiveness of sustainability communication efforts.

Recommendations

- Organizations should communicate their sustainability initiatives more transparently through AI-supported digital communication tools.
- Companies should focus on activities that strengthen brand trust and demonstrate environmental responsibility.
- Programs aimed at improving digital literacy should be encouraged.
- Future studies may examine these relationships in different countries, sectors, and demographic groups.

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The Impact of Artificial Intelligence-Supported Passenger Communication Systems on Passenger Experience in the Aviation Industry: The Mediating Role of Corporate Trust and the Moderating Effect of Digital Literacy

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Abstract

The purpose of this study is to examine the impact of artificial intelligence (AI)-supported passenger communication systems on passenger experience in the aviation sector and to determine the mediating role of corporate trust and the moderating effect of digital literacy in this relationship. The study was designed using a quantitative research approach, and the data were collected through an online survey from 401 passengers residing in the Turkish Republic of Northern Cyprus (TRNC) who had experience with airline services. The research employed the Artificial Intelligence-Supported Passenger Communication Systems Scale, Corporate Trust Scale, Digital Literacy Scale, and Passenger Experience Scale. Descriptive statistics, independent samples t-test, one-way analysis of variance (ANOVA), correlation analysis, and regression analysis were utilized to analyze the data.

The findings revealed that AI-supported passenger communication systems have a significant and positive effect on passenger experience. Furthermore, AI-supported systems were found to enhance corporate trust, while corporate trust positively influenced passenger experience. The results also indicated that corporate trust plays a mediating role in the relationship between AI-supported passenger communication systems and passenger experience. In addition, passengers with higher levels of digital literacy benefited more from AI applications and reported more positive passenger experiences. Demographic analyses demonstrated that age, educational level, and frequency of airline usage created significant differences among the research variables.

In conclusion, AI-supported passenger communication systems were identified as an important factor in improving passenger experience within the aviation industry. However, the effectiveness of these systems is strengthened by corporate trust and digital literacy. The findings are expected to contribute to the digital transformation strategies of airline companies and to the effective management of passenger experience.

Keywords: Artificial intelligence, aviation industry, passenger experience, corporate trust, digital literacy, passenger communication systems.

Havacılık Sektöründe Yapay Zekâ Destekli Yolcu İletişim Sistemlerinin Yolcu Deneyimi Üzerindeki Etkisi: Kurumsal Güvenin Aracılık Rolü ve Dijital Okuryazarlığın Düzenleyici Etkisi

Özet

Bu araştırmanın amacı, havacılık sektöründe yapay zekâ destekli yolcu iletişim sistemlerinin yolcu deneyimi üzerindeki etkisini incelemek, bu ilişkide kurumsal güvenin aracılık rolünü ve dijital okuryazarlığın düzenleyici etkisini belirlemektir. Araştırma nicel araştırma yöntemine göre tasarlanmış olup veriler Kuzey Kıbrıs Türk Cumhuriyeti'nde yaşayan ve havayolu hizmetlerinden yararlanan 401 yolcudan çevrim içi anket yöntemiyle toplanmıştır. Araştırmada Yapay Zekâ Destekli Yolcu İletişim Sistemleri Ölçeği, Kurumsal Güven Ölçeği, Dijital Okuryazarlık Ölçeği ve Yolcu Deneyimi Ölçeği kullanılmıştır. Verilerin analizinde betimsel istatistikler, bağımsız örneklem t-testi, tek yönlü varyans analizi (ANOVA), korelasyon ve regresyon analizlerinden yararlanılmıştır.

Araştırma sonuçları, yapay zekâ destekli yolcu iletişim sistemlerinin yolcu deneyimini anlamlı ve pozitif yönde etkilediğini göstermiştir. Yapay zekâ destekli sistemlerin kurumsal güveni artırdığı, kurumsal güvenin de yolcu deneyimini olumlu yönde etkilediği belirlenmiştir. Yapılan analizler kurumsal güvenin yapay zekâ destekli yolcu iletişim sistemleri ile yolcu deneyimi arasındaki ilişkide aracılık rolü üstlendiğini ortaya koymuştur. Dijital okuryazarlık düzeyi yüksek olan yolcuların yapay zekâ uygulamalarından daha fazla yararlandıkları ve daha olumlu yolcu deneyimi yaşadıkları tespit edilmiştir. Demografik değişkenlere ilişkin bulgular, yaş, eğitim düzeyi ve havayolu kullanım sıklığının araştırma değişkenleri üzerinde anlamlı farklılıklar oluşturduğunu göstermiştir. Yapay zekâ destekli yolcu iletişim sistemlerinin havacılık sektöründe yolcu deneyimini geliştiren önemli bir unsur olduğu belirlenmiştir. Ancak bu etkinin güçlenmesinde kurumsal güven ve dijital okuryazarlığın kritik bir rol oynadığı görülmüştür. Elde edilen bulguların, havayolu işletmelerinin dijital dönüşüm süreçlerine ve müşteri deneyimi yönetimine katkı sağlayacaktır.

Anahtar Kelimeler: Yapay zekâ, havacılık sektörü, yolcu deneyimi, kurumsal güven, dijital okuryazarlık, yolcu iletişim sistemleri.

Introduction

Problem Statement

Artificial intelligence in technologies developments, aviation in the sector customer services and traveller communication processes digitalization It has accelerated. Today airline businesses, chatbots, virtual assistants and automatic customer support systems through to the passengers faster and personalized service to present It aims to do s. However, this systems traveller experience on it effects How shaped and from which factors affected about in the literature important gaps (Benbya, Davenport and Pachidi , 2020). Passenger experience, airline their businesses rivalry power determining basis elements someone aspect acceptance is being done. With this together artificial intelligence supported communication systems provided benefits, passengers This to systems and service present to the institution what they heard trust to the level connected aspect it can change It is considered. Corporate trust insufficient is in technological situations How much infrastructure? developed if let it be passengers service their experiences negative can be evaluated It is predicted (Morgan and Hunt, 1994). Other from digital technologies use skill aspect defined digital literacy the level of passenger's artificial intelligence applications in their adoption important One role It is playing. Digital literacy level high individuals' artificial intelligence supported from systems more more available, low at the level digital competence owner individuals whereas These systems while using various challenges able to live as stated (Ng, 2012).

The Turkish Republic of Northern Cyprus aviation in the sector artificial intelligence supported traveller communication systems traveller to your experience its effect examining studies annoyed being, research problem It constitutes. Especially artificial intelligence supported traveller communication systems, corporate trust, digital literacy and traveller experience variables together hand area research insufficient being attention It attracts. Therefore, in the research, artificial intelligence supported traveller communication systems traveller experience on its effect, corporate trust mediation role and digital literacy regulator effect in the scope of It is being investigated.

Research Objective

The main objective of this research is to examine the impact of AI-powered passenger communication systems used in the aviation industry on passenger experience. The aim is to determine the effects of chatbots, virtual assistants, automated information systems, and AI-based customer service applications, widely used by airlines today, on passengers' perceptions of service quality and overall travel experiences. Another aim of this research is to reveal the mediating role of corporate trust in the relationship between AI powered passenger communication systems and passenger experience. Passengers' trust in airlines is considered a significant factor in the acceptance and evaluation of AI applications. In this context, the extent to which corporate trust explains the impact of AI-powered communication systems on passenger experience will be examined.

The study will also evaluate the regulatory role of digital literacy, attempting to determine how passengers' knowledge and skills in using digital technologies affect the relationship between AI-powered communication systems and passenger experience. It is hypothesized that passengers with higher levels of digital literacy can benefit more from AI applications and have more positive experiences. Accordingly, this research aims to examine the relationships between AI-powered passenger communication systems, corporate trust, digital literacy, and passenger experience within a holistic model framework, by conducting studies on passengers using airline services in the Turkish Republic of Northern Cyprus. The findings are expected to contribute to the development of digital transformation applications in the aviation sector, the strengthening of customer relationship management strategies, and the improvement of passenger satisfaction.

The Importance of Research

The aviation sector, as one of the areas where technological advancements are implemented most rapidly, is directly affected by the digital transformation process. In particular, the increasing use of artificial intelligence technologies in customer service and passenger communication processes has significantly changed the way airlines deliver their services. Today, the growing expectations of passengers for fast, personalized, and uninterrupted service further increase the importance of AI-powered communication systems. Therefore, a scientific examination of the impact of these systems on passenger experience is considered important, both in terms of academic literature and industry applications (Benbya, Davenport, and Pachidi, 2020).

The importance of this research stems from the fact that AI-powered passenger communication systems are considered not only a technological innovation but also a strategic communication tool affecting passenger satisfaction and service quality. For airlines, customer experience has become one of the most important elements providing a competitive advantage. Therefore, determining passengers' perceptions of AI-based communication applications will contribute to businesses developing customer-centric digital transformation policies (Verhoef et al., 2009).

The research is also significant because it includes the corporate trust variable in the model. With the widespread adoption of artificial intelligence technologies, issues such as data security, privacy, and system reliability have gained more importance for passengers. It is believed that the trust passengers have in airline companies plays a decisive role in their acceptance of and satisfaction with AI-supported systems. Therefore, examining the mediating role of corporate trust will contribute to the development of trust-based communication strategies in the aviation sector (Morgan and Hunt, 1994).

Another important aspect of the study is that it treats digital literacy as a moderating variable. The level of digital technology use varies among individuals, and this can directly affect the evaluation of technology-based services. Determining how passengers' digital literacy levels shape the benefits they derive from AI-supported communication systems will enable the development of more effective service strategies for different user groups (Ng, 2012).

The fact that this research is conducted within the context of the Turkish Republic of Northern Cyprus (TRNC) adds particular importance to the study. Due to the TRNC being an island nation, air transportation plays a critical role in the country's economic, social, and tourism activities. Despite this, academic studies on AI-supported communication applications in the aviation sector in the TRNC are quite limited. This research will fill a significant gap in the TRNC literature and provide original scientific data at the regional level.

Finally, the research is expected to contribute to the literature through its interdisciplinary structure, which brings together the fields of communication sciences, aviation management, digital transformation, and artificial intelligence. Examining the mediating role of corporate trust and the regulatory effect of digital literacy within the same model will contribute to the generation of new knowledge from both theoretical and applied perspectives. The findings are expected to be guiding for airline companies, airport managers, and policymakers.

Theoretical Framework

Today, advancements in digital technologies are significantly transforming the way service sectors operate and the ways they communicate with customers. One of the sectors most affected by this transformation is the aviation industry. Airlines are increasingly using artificial intelligence technologies to meet rising passenger expectations, increase operational efficiency, and gain a competitive advantage. The widespread adoption of AI-powered communication systems, particularly in areas such as customer service, reservation systems, call centers, virtual assistants, and chatbot applications, is reshaping the passenger experience (Benbya, Davenport, and Pachidi, 2020).

Artificial intelligence refers to computer systems that can mimic human intelligence and perform cognitive processes such as learning, analyzing, decision-making, and problem-solving. AI technologies comprise subfields such as machine learning, deep learning, natural language processing, and big data analytics. These technologies enable businesses to analyze customer behavior more accurately and develop services tailored to individual needs. In the aviation sector, the primary goal of using artificial intelligence is to make passenger service processes faster, more reliable, and more efficient (Maslej et al., 2024).

In the aviation industry, artificial intelligence applications are not limited to operational processes. Today, many airlines utilize AI-powered communication systems to improve customer service. Passengers can access flight information, make reservations, track baggage status, and find quick solutions to problems through these systems. AI-powered communication applications can provide uninterrupted service to customer requests and contribute to reducing human error (Funk, Sohlberg, Sundelius, Olsson and Bovet-Emanuel, 2025).

The concept of passenger experience is one of the fundamental concepts that has gained importance in the aviation sector in recent years. Passenger experience is defined as the sum of all interactions a passenger has with the airline before, during, and after their trip. All stages, from the booking process to check-in, flight information, and customer service, constitute a part of the passenger experience. Today, for airlines, customer experience is considered a strategic element that provides a competitive advantage, just as much as customer satisfaction (Verhoef et al., 2009).

Technological advancements offer significant opportunities to improve the passenger experience. AI-powered systems enable faster responses to passenger requests, the provision of personalized services, and increased customer satisfaction. However, the acceptance and effective use of these technological systems by passengers depend on certain factors. Foremost among these is corporate trust. Corporate trust refers to customers' belief that a business is honest, transparent, reliable, and responsible (Morgan and Hunt, 1994).

Corporate trust is critically important in the aviation sector. Passengers want to feel secure not only in terms of physical safety during their travels, but also in terms of the protection of their personal information and the reliable execution of service processes. During the use of AI-powered communication systems, passengers' personal data is processed, their preferences are analyzed, and various suggestions are offered. Therefore, the trust that passengers have in these systems and the airlines using them becomes a decisive factor in the adoption of these technologies (Ong, 2026).

Research shows that customers are more likely to accept technological services offered by organizations they trust. Customers with high levels of trust evaluate the suggestions offered by AI systems more positively and have higher perceptions of service quality. Conversely, individuals lacking trust may evaluate the same technological services more negatively. Therefore, it is thought that organizational trust can play a mediating role in the relationship between AI-powered passenger communication systems and passenger experience (Morgan and Hunt, 1994).

Another important factor affecting the passenger experience is digital literacy. Digital literacy refers to individuals' ability to use digital technologies effectively, consciously, and safely. With the widespread use of technological systems today, digital literacy is not only a technical skill but also encompasses an individual's capacity to understand and evaluate digital environments (Ng, 2012).

Individuals with high levels of digital literacy adapt to new technologies more quickly and benefit more from technological services. Especially in AI-powered systems, users need a certain level of digital competence to understand the technology, trust the systems' operation, and effectively utilize the services. Therefore, it is thought that the level of digital literacy can alter the impact of AI-powered communication systems on the passenger experience (Ng, 2012).

The Technology Acceptance Model (TAM) is one of the theoretical approaches frequently used to explain user adoption of AI-powered systems. Developed by Davis (1989), this model suggests that individuals' intention to use a technology is determined by perceived utility and perceived ease of use. In the context of AI-powered passenger communication systems, passengers' perception of these systems as useful and easy to use facilitates their adoption and positive experiences.

Another important approach to explaining technology use is the Unified Technology Acceptance and Use Theory (UTAUT). Developed by Venkatesh et al. (2003), this theory suggests that performance expectations, effort expectations, social influence, and facilitating conditions influence technology use. It is stated that individuals with high levels of digital literacy evaluate artificial intelligence applications more positively because they have stronger performance expectations and perceptions of ease of use.

In the aviation sector, customer experience theories play a significant role in explaining the relationship between AI-powered passenger communication systems and passenger experience. According to the customer experience approach, individuals evaluate not only the service they purchase but also all the experiences they have during the service process. All experiences a passenger has from their first contact with an airline company to the post-flight period determine their overall satisfaction level (Verhoef et al., 2009).

Numerous studies in the literature demonstrate that artificial intelligence applications positively impact customer experience. Personalized services, quick responses, and seamless communication, in particular, increase customer satisfaction. However, it is also noted that the impact of AI technologies on customer experience is not the same for every user group. Users' attitudes towards technology, trust levels, and digital skills can alter the strength of this relationship (Sharma, 2026).

When evaluated within the context of the Turkish Republic of Northern Cyprus (TRNC), the aviation sector is of strategic importance to the country's economy. As an island nation, air transport plays a critical role in the sustainability of both tourism and higher education activities. Recent investments and digitalization efforts at Ercan Airport have strengthened the technological infrastructure of passenger services. However, studies examining the impact of AI-powered passenger communication systems on passenger experience appear to be quite limited.

This research examines the impact of AI-powered passenger communication systems on passenger experience, considering both the mediating role of institutional trust and the moderating effect of digital literacy. Thus, a holistic approach is taken to evaluate how passengers perceive technological services, the role of trust in this process, and the impact of individual digital skills on the experience. The research is expected to make significant contributions to the literature on communication, aviation management, and digital transformation.

Hypotheses

H1: Artificial intelligence supported traveller communication systems traveller experience positive in the direction It has an effect .

H2: Artificial intelligence supported traveller communication systems institutional trust positive in the direction It has an effect .

H3: Corporate trust traveller experience positive in the direction It has an effect .

H4: Corporate trust , artificial intelligence supported traveller communication systems with traveller experience between in the relationship mediation role is undertaking .

H5: Digital literacy , artificial intelligence supported traveller communication systems with traveller experience between in the relationship It has a regulatory role .

Method

3.1. The Research Model

this research, aviation in the sector artificial intelligence supported traveller communication systems traveller experience on it its effect to examine for quantitative research method It has been used in research. relational scanning model within the framework It has been accomplished. Relational scanning model, variables between relationships to be determined and to be explained opportunity providing research from models It is one of them. In the research artificial intelligence supported traveller communication systems independent variable, passenger experience dependant variable, corporate trust vehicle variable and digital literacy whereas regulator variable aspect hand It has been received.

3.2. The Research the Universe and Sample

The research its universe in the Turkish Republic of Northern Cyprus weather way transport from its services beneficiary passengers It has been created. In the research easy sampling method, the data was used at Ercan Airport. trip eden and research voluntarily aspect participant from the passengers in hand Research has been conducted. in the scope of a total of 420 participants, it has been reached. Missing. And incorrect filled surveys after being removed later 400 valid analyses questionnaire over It has been accomplished.

3.3. Data Collection vehicles

In the research data collection vehicle aspect five from the section formed questionnaire form It has been used.

the first part participants demographic features to determine towards to the questions place is given. In this section gender, age, education status, occupation, income level and trip frequency like variables It has been measured.

Second in the section artificial intelligence supported traveller communication to their systems related perceptions to determine for the purpose of Venkatesh, Thong and Xu (2012) from the developed UTAUT-2 scale adapted expressions It has been used.

Third in the section participants airline to their businesses what they heard trust levels to determine for this purpose by Morgan and Hunt (1994) developed Corporate Trust Scale It has been used.

Fourth in the section digital literacy level measure for the purpose of Ng (2012) developed Digital Literacy From its scale It has been used.

Fifth in the section whereas traveller experience measure for the purpose of Klaus and By Maklan (2013) Developed Customer Experience Quality (EXQ) Scale It has been used.

In the research place area, all Items are on a 5-point Likert scale. by It has been evaluated.

3.4. Data Collection

Data Collection The process

Research The data shows that in the Turkish Republic of Northern Cyprus (TRNC) recently ... year inside -most little One times weather way transport from its services benefited from the passengers cycle intra- questionnaire by method data has been collected .Data collection vehicle aspect prepared questionnaire Form ; Demographic Information Form, Artificial Intelligence Form Intelligence Assisted Passenger Communication Systems Scale, Corporate Trust Scale , Digital Literacy Scale and Passenger Experience From its scale It has formed .

In the research simple random sampling method Data collection has been used. process finally missing and incorrect filled surveys Extracted, analyses 400 valid participant over It has been carried out. To the participants research purpose about necessary explanations done, research participation completely volunteering on the basis based on stated and in hand done all data just scientific for purposes will be used expression It has been done.

Research in the scope of participants identity information request undone, personal data privacy and ethic principles in line with to protect care It has been shown. Collected Data was collected using SPSS 29 and AMOS 24 software packages. programs by analysis done and research purposes in line with This has been evaluated (Karasar , 2020; Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz and Demirel, 2022).

3.5. Data Analysis

From the research in hand done data the analysis was performed using SPSS 29 and AMOS 24 software packages. programs It has been used.

Data in the analysis firstly frequency, percentage, arithmetic average and standard deflection values calculated. Scale's reliability to determine Cronbach Alpha reliability test analysis It has been done. The scales' structure to test its validity for Confirmatory Factor analysis (CFA) was applied.

Variables between relationships to determine Pearson correlation for the purpose of Analysis Research has been conducted .in the model place area directly effects, mediation effect and regulator the effect to examine for Structural Equality Corporate Modeling (SEM) was used. trust mediation the effect of the Bootstrap method tested with, digital literacy regulator effect whereas moderator analyses with It have been evaluated.

Table 1. Normality Analysis

Variable	Kolmogorov– Smirnov Statistic	df	Shallow.	Shapiro– Wilk Statistic	df	Shallow.	Distortion	Flatness
Artificial Intelligence Assisted Passenger Communication Systems	0.104	401	0.001	0.968	401	0.001	0.36	-0.41
Corporate Trust	0.097	401	0.003	0.972	401	0.002	0.28	-0.37
Digital Literacy	0.089	401	0.006	0.975	401	0.004	-0.22	-0.31
Passenger Experience	0.101	401	0.002	0.970	401	0.001	0.33	-0.45

Research The data was analyzed using SPSS 29.00 and AMOS 24 programs. by analysis It has been done. To be done. analyses can be determined for firstly normality analysis It has been accomplished.

As seen in Table 1 in the Kolmogorov -Smirnov and Shapiro-Wilk tests in hand done meaningfulness values less than 0.05 is It has been determined .However sample its size is 401 people being because of This tests big in samples increasingly sensitive results that it can give It is known .Therefore normality in the evaluation skewness and kurtosis values are also taken into consideration It was obtained .In the research place area Artificial Intelligence Assisted Passenger

Communication Systems, Corporate Security, Digital Literacy and Passenger Experience variables belonging distortion And flatness values within ± 1 range is This has been observed .These results in line with normal distribution of data close is acceptance done And in the analyses parametric from the tests The following were utilized .The sub- objectives of the research .in line with frequency , percentage , arithmetic average And standard deflection analyses This has been done .The scales reliability to determine Cronbach Alpha coefficients for the purpose of calculated .Scales structure testing its validity for Confirmatory Factor analysis (CFA) was applied .Variables between relationships determination Pearson Correlation for Analysis It was made .Artificial .intelligence supported traveller communication systems traveller experience on it its effect to examine for Structural Equality Corporate Modeling (SEM) was used .trust mediation the effect of the Bootstrap method while being tested with , digital literacy regulator effect moderator analyses with has been evaluated .In the research all Analyses are 95% confident. at the level accomplished and meaningfulness level $p < 0.05$ acceptance It has been done.

Validity And Reliability

In the research used Artificial Intelligence Assisted Passenger Communication Systems The scale is based on Venkatesh, Thong and Xu (2012), Corporate Trust Scale Morgan and Hunt (1994), Digital Literacy The scale was developed by Ng (2012) and the Passenger Experience Scale by Klaus and By Maklan (2013) scales have been developed .Turkish adaptations And validity-reliability studies relating to area in summer in line with examined And research in the scope of again reliability analyses It has been accomplished .

In the research used scales drink consistency levels to determine Cronbach's Alpha coefficients for the purpose of It has been calculated. The obtained the results are presented in Table 2.

Table 2. Reliability Analysis

Scale	Number of Items	Cronbach's Alpha
Artificial Intelligence Assisted Passenger Communication Systems Scale	16	0.92
Corporate Trust Scale	8	0.89

Digital Literacy Scale	17	0.90
Passenger Experience Scale	12	0.93

Table 2 is examined , Artificial Intelligence Assisted Passenger Communication Systems Scale for The calculated Cronbach's Alpha coefficient is 0.92, Corporate Trust Scale .0.89 for Digital Literacy Scale The scores were 0.90 for the Passenger Experience Scale and 0.93 for the Passenger Experience Scale .It is seen .Obtained results , all scales high at the level drink consistency owner that It shows .Nunnally and According to Bernstein (1994) , Cronbach's Alpha coefficient is 0.70 and on being scale Trustworthy that This shows .In this respect in the research used all scales reliability levels sufficient is And in the analyses can be used result It has been reached .Also confirmatory factor analysis results scales structure validity supported And in the research used measuring their vehicles valid And Trustworthy is It has been determined .

Findings

Table 3. Participants Demographic Its Features According to Distribution

Variable	Group	n	%
Gender	Woman	210	52.4
	Male	191	47.6
Age	18-25 years old	85	21.2
	26-35 years old	127	31.7
	36-45 years old	108	26.9
	46 years old and on	81	20.2
Educational Status	High school	74	18.5
	Front Licence	62	15.5
	Licence	187	46.6
	Postgraduate	78	19.4
Occupational Status	Public Employee	92	22.9
	Private Sector	189	47.1
	Student	74	18.5
	Other	46	11.5

Airline Use Frequency	Once or twice a year	148	36.9
	3-5 times a year	136	33.9
	6-10 times a year	71	17.7
	10 times and on	46	11.5
Total		401	100

52.4% of the participants were women and 47.6% were men. It consists of. Participants big the majority, 31.7%, are aged 26-35. group It constitutes education. level in terms of when examined 46.6% of participants are undergraduate graduate is It is seen. Airline use frequency in terms of 36.9% of participants visit 1-2 times a year. weather way from its services benefited It has been determined.

Table 4. Regarding Research Variables. Descriptive Statistics

Variable	n	Minimum	Maximum	Average ($\bar{X}$)	Standard Deflection
Artificial Intelligence Assisted Passenger Communication Systems	401	1.25	5.00	3.98	0.71
Corporate Trust	401	1.38	5.00	4.06	0.68
Digital Literacy	401	1.47	5.00	4.18	0.63
Passenger Experience	401	1.29	5.00	4.11	0.66

Table 4 is examined... participants artificial intelligence supported traveller communication to their systems towards perceptions high at the level is It is observed that ($\bar{X}=3.98\pm0.71$). Participants airline to their businesses what they heard institutional trust their levels are also high is It has been determined ($\bar{X}=4.06\pm0.68$). Digital literacy variable in the research -most high average owner variable aspect found ($\bar{X}=4.18\pm0.63$), participants digital technologies effective that they could use Passenger experience has shown this. variable average and 4.11 calculated being participants general journey their experiences positive they evaluated It has been seen.

Table 5. By Gender According to AI - Powered Passenger Communication Systems, Corporate Security, Digital Literacy and Passenger Experience Their Scores Comparison

Variable	Gender	n	Average	SS	t	p
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Artificial Intelligence Assisted Passenger Woman	210	3.87	0.69	-	0.006*
Communication Systems				2,784	
	Male	191	4.11	0.71	
Corporate Trust	Woman	210	3.98	0.67	0.012*
				2,512	
	Male	191	4.16	0.69	
Digital Literacy	Woman	210	4.09	0.65	0.003*
				2,946	
	Male	191	4.28	0.61	
Passenger Experience	Woman	210	4.01	0.68	0.002*
				3,107	
	Male	191	4.23	0.63	

*p < 0.05

The results of the independent samples t-test based on gender revealed significant differences ($p < 0.05$) in participants' perceptions of AI-powered passenger communication systems, levels of corporate trust, digital literacy, and passenger experiences. Male participants had higher average scores than female participants in all variables. This finding indicates that male participants have a more positive view of AI-powered communication systems, a higher level of trust in airlines, greater proficiency in using digital technologies, and a more positive perception of overall passenger experiences.

Table 6. Age To their groups According to AI - Powered Passenger Communication Systems, Corporate Security, Digital Literacy and Passenger Experience Their Scores Comparison

Variable	Age Group	n	Average	SS	F	p
Artificial Intelligence Assisted Passenger	18-25	85	4.28	0.54	8,462	0.000*
Communication Systems	26-35	127	4.12	0.61		
	36-45	108	3.89	0.70		
	46 and on	81	3.67	0.76		
Corporate Trust	18-25	85	4.18	0.60	4,128	0.007*
	26-35	127	4.12	0.66		
	36-45	108	4.01	0.71		

	46 and on	81	3.92	0.73		
Digital Literacy	18-25	85	4.45	0.49	16,742	0.000*
	26-35	127	4.27	0.57		
	36-45	108	4.05	0.63		
	46 and on	81	3.81	0.71		
Passenger Experience	18-25	85	4.21	0.58	3,684	0.012*
	26-35	127	4.16	0.61		
	36-45	108	4.07	0.68		
	46 and on	81	3.95	0.72		

*p < 0.05

The results of the one-way analysis of variance conducted according to age groups show that there are statistically significant differences in participants' perceptions of AI-supported passenger communication systems, levels of institutional trust, digital literacy, and passenger experiences ($p < 0.05$).

According to the research findings, participants in the 18-25 age group, in particular, were found to have higher perceptions of AI-powered passenger communication systems and higher levels of digital literacy compared to other age groups. A partial decrease in perception and proficiency in using digital technologies was observed as age increased. Similarly, younger participants were found to have more positive evaluations of passenger experiences and trust in airlines.

Table 7. By Educational Attainment AI - Powered Passenger Communication Systems, Corporate Security, Digital Literacy and Passenger Experience Their scores Comparison

Variable	Educational Status	n	Average	SS	F	p
Artificial Intelligence Assisted Passenger Communication Systems	High school	74	3.71	0.75	7,584	0.000*
	Front Licence	62	3.89	0.70		
	Licence	187	4.05	0.66		
	Postgraduate	78	4.22	0.61		
Corporate Trust	High school	74	3.89	0.72	4,123	0.007*

	Front Licence	62	4.01	0.68		
	Licence	187	4.08	0.66		
	Postgraduate	78	4.24	0.60		
Digital Literacy	High school	74	3.76	0.71	18,441	0.000*
	Front Licence	62	4.01	0.64		
	Licence	187	4.23	0.57		
	Postgraduate	78	4.42	0.49		
Passenger Experience	High school	74	3.91	0.71	5,267	0.002*
	Front Licence	62	4.02	0.66		
	Licence	187	4.16	0.62		
	Postgraduate	78	4.27	0.58		

*p < 0.05

Education to the situation according to performed only directional variance analysis the results , participants artificial intelligence supported traveller communication systems perceptions , corporate trust levels , digital literacy And traveller experiences between significant differences that This shows ($p < 0.05$).

Participants education level as it rises artificial intelligence supported communication to their systems towards perceptions more positive halo came It has been determined .Specifically postgraduate education to the level owner participants both digitally literacy and passenger experience their scores other to groups according to more high is It is observed .The findings relate to education .level digital technologies adaptation , technological from services utilization And airline services evaluation in their processes important One variable that to emerge It places .

Table 8. Comparison of AI-Powered Passenger Communication Systems, Corporate Trust, Digital Literacy, and Passenger Experience Scores Based on Airline Usage Frequency.

Variable	Airline Use Frequency	n	Average	SS	F	p
Artificial Intelligence Assisted Passenger Communication Systems	Once or twice a year	148	3.78	0.74	9,624	0.000*
	3-5 times a year	136	3.96	0.69		
	6-10 times a year	71	4.17	0.61		

	10 times a year And on	46	4.35	0.57		
Corporate Trust	Once or twice a year	148	3.91	0.72	6,183	0.000*
	3-5 times a year	136	4.05	0.67		
	6-10 times a year	71	4.19	0.59		
	10 times a year And on	46	4.31	0.55		
Digital Literacy	Once or twice a year	148	3.97	0.68	11,857	0.000*
	3-5 times a year	136	4.17	0.60		
	6-10 times a year	71	4.31	0.53		
	10 times a year And on	46	4.48	0.47		
Passenger Experience	Once or twice a year	148	3.95	0.70	8,442	0.000*
	3-5 times a year	136	4.11	0.63		
	6-10 times a year	71	4.25	0.58		
	10 times a year And on	46	4.39	0.51		

*p < 0.05

Airline use frequency according to performed only directional variance analysis the results , participants artificial intelligence supported traveller communication systems perceptions , corporate trust levels , digital literacy And traveller experiences in terms of significant differences that This shows (p<0.05). The findings indicate that the airway use frequency as participants artificial intelligence supported traveller communication to their systems towards perceptions , corporate trust levels , digital their literacy And traveller your experiences increased to emerge It places .Especially 10 times a year And on trip eden passengers all in variables -most high averages owner that they are It has been determined .This situation, the weather way from its services more chic beneficiary individuals digital to systems more more familiarity what they developed And presented services more positive they evaluated It shows .

Table 9. Artificial Intelligence Assisted Passenger Communication Regression Regarding the Impact of Systems on Passenger Experience Analysis Results

Independent Variable		B	β	t	p
Artificial Intelligence Assisted Passenger Communication Systems		0.712	0.741	18,964	0.000*
R	R ²	Corrected R ²	F	p	
0.741	0.549	0.548	359,632	0.000*	

$p < 0.05$

Regression analysis results according to artificial intelligence supported traveller communication systems , passenger experience significant And positive in the direction It has an effect ($\beta=0.741$; $p<0.001$). The model clarity power Upon examination , artificial intelligence supported traveller communication systems traveller in your experience change approximately 54.9% disclosed It is observed that ($R^2=0.549$).

Argument

this research, artificial intelligence supported traveller communication systems traveller experience on it effect examined and in hand done findings, words subject systems traveller experience significant and positive in the direction that it affected to emerge He placed it. Regression analysis results, artificial intelligence supported communication applications traveller in your experience change important One section he explained This shows. This result is artificial. intelligence applications service quality increased and customer experience he developed in the direction of through studies parallelism It shows. Especially chatbots, virtual assistants and automatic to inform systems thanks to passengers faster and uninterrupted service as much as he/she can It is stated (Benbya , Davenport and Pachidi , 2020; Verhoef et al., 2009).

In the research artificial intelligence supported traveller communication systems with institutional trust between positive directional significant One relationship This finding indicates that the airway... their businesses offered digital services just technological sufficiency in terms of No, it's not the same. in time trust element also evaluated in terms of that It shows .Passengers' artificial intelligence systems while using personal data will be protected And systems Trustworthy will work towards beliefs as to the institution what they heard Confidence is also increasing .The results obtained ... results , relationship marketing theory within the framework trust customer their relationships basis determinants someone that to emerge put through studies They overlap (Morgan and Hunt, 1994; Ong, 2026).

The research One other important result, corporate trust with traveller experience between strong and significant One the relationship It is the presence of passengers. airline to their businesses what they heard trust as service processes more positive they evaluated This has been observed. This result is for the customer. experience just presented service with its quality No, it's not the same. in time service supplier to the institution towards trust it is also shaped by perception This is demonstrated. Trust is also mentioned in the literature. of feeling customer satisfaction and customer experience -most important determinants someone is This is emphasized (Morgan and Hunt, 1994; Verhoef et al., 2009).

In the research age to the variable according to in hand done findings , young participants artificial intelligence supported communication to their systems towards perceptions And digital literacy levels more high that This shows .Especially for those aged 18-25 .group technology based services more positive evaluation , digital with technologies growing generations to new systems more fast rapport that it can provide to emerge This situation is related to the Technology Adoption Model .And Unified Technology Adoption and Use Theory of basis assumptions This is supported by (Davis, 1989; Venkatesh et al ., 2003).

Education to the level related the findings also draw attention. It is attractive .Education level as it rises artificial intelligence supported to systems towards positive perception , digital literacy And traveller experience increased It has been determined .This result is related to education .level individuals technological systems understanding , evaluating And effective use skills he developed It shows .Digital competence with the increase together users artificial intelligence from applications more more use the services they provided And This Therefore service their experiences more positive they evaluated it can be said (Ng, 2012).

Airline use frequency according to done in analyses, frequently trip eden passengers artificial intelligence supported communication systems , corporate trust , digital literacy And traveller experience in terms of more high points owner that they are This situation has been observed with services .more more interaction Koran individuals to systems familiarity that he won And digital from applications more more that you can benefit from It shows. Usage experience as technological to systems towards perception positive in the direction developed in the direction of research This the finding This is supported by (Venkatesh et al ., 2012; Sharma, 2026).

The research theoretical from the perspective -most important from the findings someone, corporate trust mediation to his role related These are the results obtained. findings, artificial intelligence supported traveller communication systems traveller experience on it effect important to the extent institutional trust through that it happened This shows that the passengers technological systems while evaluating just technical features not , service supplier to the institution what they heard trust also takes into account what they received to emerge It places .Other One In other words , trust feeling artificial intelligence applications traveller to your experience transformation providing critical One mechanism aspect can be evaluated (Morgan and Hunt, 1994).

In the research digital literacy regulator effect related in hand done The results are also noteworthy .It's attractive .Digital literacy level high the one which... passengers artificial intelligence supported from systems more more benefited And more positive experiences the ones they lived It has been determined .In contrast digital competence low in individuals same systems effect more annoyed where he stayed This is evident .This result is digital .transformation in their processes users technological skills take into consideration to be taken that It shows .Airline their businesses different user to their profiles suitable digital communication strategies improvements importance It carries (Ng, 2012; Venkatesh et al ., 2003).

Generally when evaluated research results, artificial intelligence supported traveller communication systems aviation in the sector traveller experience developer important One element that to emerge It places. However, this effect to emerge in the exit institutional trust and digital literacy like variables decisive role played It is understood. Therefore, airline their businesses just technological investments their focus sufficient not the same in time trust forming communication policies improvements and passengers digital their qualifications supportive applications their orientations This approach is necessary for sustainability. customer satisfaction and rivalry advantage in terms of important contributions will provide (Benbya) et al., 2020; Verhoef et al., 2009; Ng, 2012).

CONCLUSION

This research was conducted in the Turkish Republic of Northern Cyprus. activity showing airline businesses in the context artificial intelligence supported traveller communication systems traveller experience on it effect examined; corporate trust mediation role and digital literacy regulator effect the research has been evaluated. results, artificial intelligence supported traveller communication systems traveller experience significant and positive in the direction that it affected to emerge He placed it. Especially digital communication technologies offered fast back notification, personalized service and accessibility possibilities passengers service quality towards perceptions strengthened It has been determined.

In the research in hand done findings, artificial intelligence supported communication systems institutional trust positive One effect owner that it has shown. Passengers' airline to their businesses towards trust levels as it increases, in general traveller their experiences also positive evaluated detection This result is technological. innovations customer to your experience contribution just technical with competence annoyed not, the same in time institutional trust with its element support that to emerge It is placing. It has been realized. mediation analysis results, corporate trust artificial intelligence supported traveller communication systems with traveler experience between in the relationship important One mediation role undertaking has shown. Other One in other words, artificial intelligence applications traveller experience in its development to the institution heard trust basis One mechanism aspect to emerge This situation arises. This is the airline. their businesses technological investments trust creator communication with their strategies their support importance This shows. The research One other important the result, digital literacy

regulator effect It is related. The findings are digital. literacy level high the one which... passengers' artificial intelligence supported communication from their systems more more benefited And These systems more positive that he evaluated to emerge It has placed it. Digital technologies judge individuals service processes more effective their use, artificial intelligence applications traveller experience on it its effect It strengthens.

Demographic variables related analyses, age, education level and airline use frequency like variables research variables on significant differences that he created It has shown. Especially youth, education level high and chic trip eden passengers' artificial intelligence supported to systems towards perceptions and traveller your experiences more positive is It has been determined. These results are digital. transformation in their process's user profiles take into consideration taking necessity to emerge It places. Result as, artificial intelligence supported traveller communication systems nowadays aviation in the sector customer satisfaction and traveller experience increasing strategic vehicles between place It is taking. However, this from systems expected full benefit in hand to be able to for institutional trust strengthening and passengers' digital literacy levels increase It is required. Airline their businesses technology investments person focused communication with their policies integration, sustainable rivalry advantage in hand to do and traveller satisfaction to increase important contributions will provide.

Suggestions

- Airline businesses, artificial intelligence supported traveller communication systems by developing to the passengers more fast, personalized and uninterrupted service should provide.
- Passengers to the institution heard trust increase for data security, privacy and transparency principles importance should be given.
- Digital literacy level low to the passengers towards to inform and use guides should be prepared.
- Artificial intelligence applications person with the support of together by customer satisfaction increase must be provided.
- Airline businesses traveller back notifications organised aspect by evaluating artificial intelligence systems continually It should be improved.
- In the future will be done in research different countries and airline companies' comparative aspect It can be examined.

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THE IMPACT OF ARTIFICIAL INTELLIGENCE-SUPPORTED PASSENGER COMMUNICATION SYSTEMS ON PASSENGER EXPERIENCE IN THE AVIATION INDUSTRY: THE MEDIATING ROLE OF CORPORATE TRUST AND THE MODERATING EFFECT OF DIGITAL LITERACY

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ABSTRACT

The purpose of this study is to examine the impact of artificial intelligence (AI)-supported passenger communication systems on passenger experience in the aviation sector and to determine the mediating role of corporate trust and the moderating effect of digital literacy in this relationship. The study was designed using a quantitative research approach, and the data were collected through an online survey from 401 passengers residing in the Turkish Republic of Northern Cyprus (TRNC) who had experience with airline services. The research employed the Artificial Intelligence-Supported Passenger Communication Systems Scale, Corporate Trust Scale, Digital Literacy Scale, and Passenger Experience Scale. Descriptive statistics, independent samples t-test, one-way analysis of variance (ANOVA), correlation analysis, and regression analysis were utilized to analyze the data.

The findings revealed that AI-supported passenger communication systems have a significant and positive effect on passenger experience. Furthermore, AI-supported systems were found to enhance corporate trust, while corporate trust positively influenced passenger experience. The results also indicated that corporate trust plays a mediating role in the relationship between AI-supported passenger communication systems and passenger experience. In addition, passengers with higher levels of digital literacy benefited more from AI applications and reported more positive passenger experiences. Demographic analyses demonstrated that age, educational level, and frequency of airline usage created significant differences among the research variables.

In conclusion, AI-supported passenger communication systems were identified as an important factor in improving passenger experience within the aviation industry. However, the effectiveness of these systems is strengthened by corporate trust and digital literacy. The findings are expected to contribute to the digital transformation strategies of airline companies and to the effective management of passenger experience.

Keywords: Artificial intelligence, aviation industry, passenger experience, corporate trust, digital literacy, passenger communication systems.

Introduction

Problem Statement

Artificial intelligence in technologies developments, aviation in the sector customer services and traveller communication processes digitalization It has accelerated. Today airline businesses, chatbots, virtual assistants and automatic customer support systems through to the passengers faster and personalized service to present It aims to do s. However, this systems traveller experience on it effects How shaped and from which factors affected about in the literature important gaps (Benbya, Davenport and Pachidi , 2020). Passenger experience, airline their businesses rivalry power determining basis elements someone aspect acceptance is being done. With this together artificial intelligence supported communication systems provided benefits, passengers This to systems and service present to the institution what they heard trust to the level connected aspect it can change It is considered. Corporate trust insufficient is in technological situations How much infrastructure? developed if let it be passengers service their experiences negative can be evaluated It is predicted (Morgan and Hunt, 1994). Other from digital technologies use skill aspect defined digital literacy the level of passenger's artificial intelligence applications in their adoption important One role It is playing. Digital literacy level high individuals' artificial intelligence supported from systems more more available, low at the level digital competence owner individuals whereas These systems while using various challenges able to live as stated (Ng, 2012).

The Turkish Republic of Northern Cyprus aviation in the sector artificial intelligence supported traveller communication systems traveller to your experience its effect examining studies annoyed being, research problem It constitutes. Especially artificial intelligence supported traveller communication systems, corporate trust, digital literacy and traveller experience variables together hand area research insufficient being attention It attracts. Therefore,

in the research, artificial intelligence supported traveller communication systems traveller experience on its effect, corporate trust mediation role and digital literacy regulator effect in the scope of It is being investigated.

Research Objective

The main objective of this research is to examine the impact of AI-powered passenger communication systems used in the aviation industry on passenger experience. The aim is to determine the effects of chatbots, virtual assistants, automated information systems, and AI-based customer service applications, widely used by airlines today, on passengers' perceptions of service quality and overall travel experiences. Another aim of this research is to reveal the mediating role of corporate trust in the relationship between AI powered passenger communication systems and passenger experience. Passengers' trust in airlines is considered a significant factor in the acceptance and evaluation of AI applications. In this context, the extent to which corporate trust explains the impact of AI-powered communication systems on passenger experience will be examined.

The study will also evaluate the regulatory role of digital literacy, attempting to determine how passengers' knowledge and skills in using digital technologies affect the relationship between AI-powered communication systems and passenger experience. It is hypothesized that passengers with higher levels of digital literacy can benefit more from AI applications and have more positive experiences. Accordingly, this research aims to examine the relationships between AI-powered passenger communication systems, corporate trust, digital literacy, and passenger experience within a holistic model framework, by conducting studies on passengers using airline services in the Turkish Republic of Northern Cyprus. The findings are expected to contribute to the development of digital transformation applications in the aviation sector, the strengthening of customer relationship management strategies, and the improvement of passenger satisfaction.

The Importance of Research

The aviation sector, as one of the areas where technological advancements are implemented most rapidly, is directly affected by the digital transformation process. In particular, the increasing use of artificial intelligence technologies in customer service and passenger communication processes has significantly changed the way airlines deliver their services. Today, the growing expectations of passengers for fast, personalized, and uninterrupted service further increase the importance of AI-powered communication systems. Therefore, a scientific examination of the impact of these systems on passenger experience is considered important, both in terms of academic literature and industry applications (Benbya, Davenport, and Pachidi, 2020).

The importance of this research stems from the fact that AI-powered passenger communication systems are considered not only a technological innovation but also a strategic communication tool affecting passenger satisfaction and service quality. For airlines, customer experience has become one of the most important elements providing a competitive advantage. Therefore, determining passengers' perceptions of AI-based communication applications will contribute to businesses developing customer-centric digital transformation policies (Verhoef et al., 2009).

The research is also significant because it includes the corporate trust variable in the model. With the widespread adoption of artificial intelligence technologies, issues such as data security, privacy, and system reliability have gained more importance for passengers. It is believed that the trust passengers have in airline companies plays a decisive role in their acceptance of and satisfaction with AI-supported systems. Therefore, examining the mediating role of corporate trust will contribute to the development of trust-based communication strategies in the aviation sector (Morgan and Hunt, 1994).

Another important aspect of the study is that it treats digital literacy as a moderating variable. The level of digital technology use varies among individuals, and this can directly affect the evaluation of technology-based services. Determining how passengers' digital literacy levels shape the benefits they derive from AI-supported communication systems will enable the development of more effective service strategies for different user groups (Ng, 2012).

The fact that this research is conducted within the context of the Turkish Republic of Northern Cyprus (TRNC) adds particular importance to the study. Due to the TRNC being an island nation, air transportation plays a critical role in the country's economic, social, and tourism activities. Despite this, academic studies on AI-supported communication applications in the aviation sector in the TRNC are quite limited. This research will fill a significant gap in the TRNC literature and provide original scientific data at the regional level.

Finally, the research is expected to contribute to the literature through its interdisciplinary structure, which brings together the fields of communication sciences, aviation management, digital transformation, and artificial intelligence. Examining the mediating role of corporate trust and the regulatory effect of digital literacy within the same model will contribute to the generation of new knowledge from both theoretical and applied perspectives. The findings are expected to be guiding for airline companies, airport managers, and policymakers.

Theoretical Framework

Today, advancements in digital technologies are significantly transforming the way service sectors operate and the ways they communicate with customers. One of the sectors most affected by this transformation is the aviation industry. Airlines are increasingly using artificial intelligence technologies to meet rising passenger expectations, increase operational efficiency, and gain a competitive advantage. The widespread adoption of AI-powered communication systems, particularly in areas such as customer service, reservation systems, call centers, virtual assistants, and chatbot applications, is reshaping the passenger experience (Benbya, Davenport, and Pachidi, 2020).

Artificial intelligence refers to computer systems that can mimic human intelligence and perform cognitive processes such as learning, analyzing, decision-making, and problem-solving. AI technologies comprise subfields such as machine learning, deep learning, natural language processing, and big data analytics. These technologies enable businesses to analyze customer behavior more accurately and develop services tailored to individual needs. In the aviation sector, the primary goal of using artificial intelligence is to make passenger service processes faster, more reliable, and more efficient (Maslej et al., 2024).

In the aviation industry, artificial intelligence applications are not limited to operational processes. Today, many airlines utilize AI-powered communication systems to improve customer service. Passengers can access flight information, make reservations, track baggage status, and find quick solutions to problems through these systems. AI-powered communication applications can provide uninterrupted service to customer requests and contribute to reducing human error (Funk, Sohlberg, Sundelius, Olsson and Bovet-Emanuel, 2025).

The concept of passenger experience is one of the fundamental concepts that has gained importance in the aviation sector in recent years. Passenger experience is defined as the sum of all interactions a passenger has with the airline before, during, and after their trip. All stages, from the booking process to check-in, flight information, and customer service, constitute a part of the passenger experience. Today, for airlines, customer experience is considered a strategic element that provides a competitive advantage, just as much as customer satisfaction (Verhoef et al., 2009).

Technological advancements offer significant opportunities to improve the passenger experience. AI-powered systems enable faster responses to passenger requests, the provision of personalized services, and increased customer satisfaction. However, the acceptance and effective use of these technological systems by passengers depend on certain factors. Foremost among these is corporate trust. Corporate trust refers to customers' belief that a business is honest, transparent, reliable, and responsible (Morgan and Hunt, 1994).

Corporate trust is critically important in the aviation sector. Passengers want to feel secure not only in terms of physical safety during their travels, but also in terms of the protection of their personal information and the reliable execution of service processes. During the use of AI-powered communication systems, passengers' personal data is processed, their preferences are analyzed, and various suggestions are offered. Therefore, the trust that passengers have in these systems and the airlines using them becomes a decisive factor in the adoption of these technologies (Ong, 2026).

Research shows that customers are more likely to accept technological services offered by organizations they trust. Customers with high levels of trust evaluate the suggestions offered by AI systems more positively and have higher perceptions of service quality. Conversely, individuals lacking trust may evaluate the same technological services more negatively. Therefore, it is thought that organizational trust can play a mediating role in the relationship between AI-powered passenger communication systems and passenger experience (Morgan and Hunt, 1994).

Another important factor affecting the passenger experience is digital literacy. Digital literacy refers to individuals' ability to use digital technologies effectively, consciously, and safely. With the widespread use of technological systems today, digital literacy is not only a technical skill but also encompasses an individual's capacity to understand and evaluate digital environments (Ng, 2012).

Individuals with high levels of digital literacy adapt to new technologies more quickly and benefit more from technological services. Especially in AI-powered systems, users need a certain level of digital competence to understand the technology, trust the systems' operation, and effectively utilize the services. Therefore, it is thought that the level of digital literacy can alter the impact of AI-powered communication systems on the passenger experience (Ng, 2012).

The Technology Acceptance Model (TAM) is one of the theoretical approaches frequently used to explain user adoption of AI-powered systems. Developed by Davis (1989), this model suggests that individuals' intention to use a technology is determined by perceived utility and perceived ease of use. In the context of AI-powered passenger communication systems, passengers' perception of these systems as useful and easy to use facilitates their adoption and positive experiences.

Another important approach to explaining technology use is the Unified Technology Acceptance and Use Theory (UTAUT). Developed by Venkatesh et al. (2003), this theory suggests that performance expectations, effort expectations, social influence, and facilitating conditions influence technology use. It is stated that individuals with

high levels of digital literacy evaluate artificial intelligence applications more positively because they have stronger performance expectations and perceptions of ease of use.

In the aviation sector, customer experience theories play a significant role in explaining the relationship between AI-powered passenger communication systems and passenger experience. According to the customer experience approach, individuals evaluate not only the service they purchase but also all the experiences they have during the service process. All experiences a passenger has from their first contact with an airline company to the post-flight period determine their overall satisfaction level (Verhoef et al., 2009).

Numerous studies in the literature demonstrate that artificial intelligence applications positively impact customer experience. Personalized services, quick responses, and seamless communication, in particular, increase customer satisfaction. However, it is also noted that the impact of AI technologies on customer experience is not the same for every user group. Users' attitudes towards technology, trust levels, and digital skills can alter the strength of this relationship (Sharma, 2026).

When evaluated within the context of the Turkish Republic of Northern Cyprus (TRNC), the aviation sector is of strategic importance to the country's economy. As an island nation, air transport plays a critical role in the sustainability of both tourism and higher education activities. Recent investments and digitalization efforts at Ercan Airport have strengthened the technological infrastructure of passenger services. However, studies examining the impact of AI-powered passenger communication systems on passenger experience appear to be quite limited.

This research examines the impact of AI-powered passenger communication systems on passenger experience, considering both the mediating role of institutional trust and the moderating effect of digital literacy. Thus, a holistic approach is taken to evaluate how passengers perceive technological services, the role of trust in this process, and the impact of individual digital skills on the experience. The research is expected to make significant contributions to the literature on communication, aviation management, and digital transformation.

Hypotheses

H1: Artificial intelligence supported traveller communication systems traveller experience positive in the direction It has an effect .

H2: Artificial intelligence supported traveller communication systems institutional trust positive in the direction It has an effect .

H3: Corporate trust traveller experience positive in the direction It has an effect .

H4: Corporate trust , artificial intelligence supported traveller communication systems with traveller experience between in the relationship mediation role is undertaking .

H5: Digital literacy , artificial intelligence supported traveller communication systems with traveller experience between in the relationship It has a regulatory role .

Method

3.1. The Research Model

this research, aviation in the sector artificial intelligence supported traveller communication systems traveller experience on it its effect to examine for quantitative research method It has been used in research. relational scanning model within the framework It has been accomplished. Relational scanning model, variables between relationships to be determined and to be explained opportunity providing research from models It is one of them. In the research artificial intelligence supported traveller communication systems independent variable, passenger experience dependant variable, corporate trust vehicle variable and digital literacy whereas regulator variable aspect hand It has been received.

3.2. The Research the Universe and Sample

The research its universe in the Turkish Republic of Northern Cyprus weather way transport from its services beneficiary passengers It has been created. In the research easy sampling method, the data was used at Ercan Airport. trip eden and research voluntarily aspect participant from the passengers in hand Research has been conducted. in the scope of a total of 420 participants, it has been reached. Missing. And incorrect filled surveys after being removed later 400 valid analyses questionnaire over It has been accomplished.

3.3. Data Collection vehicles

In the research data collection vehicle aspect five from the section formed questionnaire form It has been used. the first part participants demographic features to determine towards to the questions place is given. In this section gender, age, education status, occupation, income level and trip frequency like variables It has been measured.

Second in the section artificial intelligence supported traveller communication to their systems related perceptions to determine for the purpose of Venkatesh, Thong and Xu (2012) from the developed UTAUT-2 scale adapted expressions It has been used.

Third in the section participants airline to their businesses what they heard trust levels to determine for this purpose by Morgan and Hunt (1994) developed Corporate Trust Scale It has been used.

Fourth in the section digital literacy level measure for the purpose of Ng (2012) developed Digital Literacy From its scale It has been used.

Fifth in the section whereas traveller experience measure for the purpose of Klaus and By Maklan (2013) Developed Customer Experience Quality (EXQ) Scale It has been used.

In the research place area, all Items are on a 5-point Likert scale. by It has been evaluated.

3.4. Data Collection

Data Collection The process

Research The data shows that in the Turkish Republic of Northern Cyprus (TRNC) recently ... year inside -most little One times weather way transport from its services benefited from the passengers cycle intra- questionnaire by method data has been collected .Data collection vehicle aspect prepared questionnaire Form ; Demographic Information Form, Artificial Intelligence Form Intelligence Assisted Passenger Communication Systems Scale, Corporate Trust Scale , Digital Literacy Scale and Passenger Experience From its scale It has formed .

In the research simple random sampling method Data collection has been used. process finally missing and incorrect filled surveys Extracted, analyses 400 valid participant over It has been carried out. To the participants research purpose about necessary explanations done, research participation completely volunteering on the basis based on stated and in hand done all data just scientific for purposes will be used expression It has been done.

Research in the scope of participants identity information request undone, personal data privacy and ethic principles in line with to protect care It has been shown. Collected Data was collected using SPSS 29 and AMOS 24 software packages. programs by analysis done and research purposes in line with This has been evaluated (Karasar , 2020; Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz and Demirel, 2022).

3.5. Data Analysis

From the research in hand done data the analysis was performed using SPSS 29 and AMOS 24 software packages. programs It has been used.

Data in the analysis firstly frequency, percentage, arithmetic average and standard deflection values calculated. Scale's reliability to determine Cronbach Alpha reliability test analysis It has been done. The scales' structure to test its validity for Confirmatory Factor analysis (CFA) was applied.

Variables between relationships to determine Pearson correlation for the purpose of Analysis Research has been conducted .in the model place area directly effects, mediation effect and regulator the effect to examine for Structural Equality Corporate Modeling (SEM) was used. trust mediation the effect of the Bootstrap method tested with, digital literacy regulator effect whereas moderator analyses with It have been evaluated.

Table 1. Normality Analysis

Variable	Kolmogorov– Smirnov Statistic	df	Shallow.	Shapiro– Wilk Statistic	df	Shallow.	Distortion	Flatness
Artificial Intelligence Assisted Passenger Communication Systems	0.104	401	0.001	0.968	401	0.001	0.36	-0.41
Corporate Trust	0.097	401	0.003	0.972	401	0.002	0.28	-0.37
Digital Literacy	0.089	401	0.006	0.975	401	0.004	-0.22	-0.31
Passenger Experience	0.101	401	0.002	0.970	401	0.001	0.33	-0.45

Research The data was analyzed using SPSS 29.00 and AMOS 24 programs. by analysis It has been done. To be done. analyses can be determined for firstly normality analysis It has been accomplished.

As seen in Table 1 in the Kolmogorov -Smirnov and Shapiro-Wilk tests in hand done meaningfulness values less than 0.05 is It has been determined .However sample its size is 401 people being because of This tests big in samples increasingly sensitive results that it can give It is known .Therefore normality in the evaluation skewness and kurtosis values are also taken into consideration It was obtained .In the research place area Artificial Intelligence Assisted Passenger Communication Systems, Corporate Security, Digital Literacy and Passenger Experience variables

belonging distortion And flatness values within ± 1 range is This has been observed .These results in line with normal distribution of data close is acceptance done And in the analyses parametric from the tests The following were utilized .The sub- objectives of the research .in line with frequency , percentage , arithmetic average And standard deflection analyses This has been done .The scales reliability to determine Cronbach Alpha coefficients for the purpose of calculated .Scales structure testing its validity for Confirmatory Factor analysis (CFA) was applied .Variables between relationships determination Pearson Correlation for Analysis It was made .Artificial .intelligence supported traveller communication systems traveller experience on it its effect to examine for Structural Equality Corporate Modeling (SEM) was used .trust mediation the effect of the Bootstrap method while being tested with , digital literacy regulator effect moderator analyses with has been evaluated .In the research all Analyses are 95% confident. at the level accomplished and meaningfulness level $p < 0.05$ acceptance It has been done.

Validity And Reliability

In the research used Artificial Intelligence Assisted Passenger Communication Systems The scale is based on Venkatesh, Thong and Xu (2012), Corporate Trust Scale Morgan and Hunt (1994), Digital Literacy The scale was developed by Ng (2012) and the Passenger Experience Scale by Klaus and By Maklan (2013) scales have been developed .Turkish adaptations And validity-reliability studies relating to area in summer in line with examined And research in the scope of again reliability analyses It has been accomplished .

In the research used scales drink consistency levels to determine Cronbach's Alpha coefficients for the purpose of It has been calculated. The obtained the results are presented in Table 2.

Table 2. Reliability Analysis

Scale	Number of Items	Cronbach's Alpha
Artificial Intelligence Assisted Passenger Communication Systems Scale	16	0.92
Corporate Trust Scale	8	0.89
Digital Literacy Scale	17	0.90
Passenger Experience Scale	12	0.93

Table 2 is examined , Artificial Intelligence Assisted Passenger Communication Systems Scale for The calculated Cronbach's Alpha coefficient is 0.92, Corporate Trust Scale .0.89 for Digital Literacy Scale The scores were 0.90 for the Passenger Experience Scale and 0.93 for the Passenger Experience Scale .It is seen .Obtained results , all scales high at the level drink consistency owner that It shows .Nunnally and According to Bernstein (1994) , Cronbach's Alpha coefficient is 0.70 and on being scale Trustworthy that This shows .In this respect in the research used all scales reliability levels sufficient is And in the analyses can be used result It has been reached .Also confirmatory factor analysis results scales structure validity supported And in the research used measuring their vehicles valid And Trustworthy is It has been determined .

Findings

Table 3. Participants Demographic Its Features According to Distribution

Variable	Group	n	%
Gender	Woman	210	52.4
	Male	191	47.6
Age	18-25 years old	85	21.2
	26-35 years old	127	31.7
	36-45 years old	108	26.9
	46 years old and on	81	20.2
Educational Status	High school	74	18.5
	Front Licence	62	15.5

	Licence	187	46.6
	Postgraduate	78	19.4
Occupational Status	Public Employee	92	22.9
	Private Sector	189	47.1
	Student	74	18.5
	Other	46	11.5
Airline Use Frequency	Once or twice a year	148	36.9
	3-5 times a year	136	33.9
	6-10 times a year	71	17.7
	10 times and on	46	11.5
Total		401	100

52.4% of the participants were women and 47.6% were men. It consists of. Participants big the majority, 31.7%, are aged 26-35. group It constitutes education. level in terms of when examined 46.6% of participants are undergraduate graduate is It is seen. Airline use frequency in terms of 36.9% of participants visit 1-2 times a year. weather way from its services benefited It has been determined.

Table 4. Regarding Research Variables. Descriptive Statistics

Variable	n	Minimum	Maximum	Average ($\bar{X}$)	Standard Deflection
Artificial Intelligence Assisted Passenger Communication Systems	401	1.25	5.00	3.98	0.71
Corporate Trust	401	1.38	5.00	4.06	0.68
Digital Literacy	401	1.47	5.00	4.18	0.63
Passenger Experience	401	1.29	5.00	4.11	0.66

Table 4 is examined... participants artificial intelligence supported traveller communication to their systems towards perceptions high at the level is It is observed that ($\bar{X}=3.98\pm0.71$). Participants airline to their businesses what they heard institutional trust their levels are also high is It has been determined ($\bar{X}=4.06\pm0.68$). Digital literacy variable in the research -most high average owner variable aspect found ($\bar{X}=4.18\pm0.63$), participants digital technologies effective that they could use Passenger experience has shown this. variable average and 4.11 calculated being participants general journey their experiences positive they evaluated It has been seen.

Table 5. By Gender According to AI - Powered Passenger Communication Systems, Corporate Security, Digital Literacy and Passenger Experience Their Scores Comparison

Variable	Gender	n	Average	SS	t	p
Artificial Intelligence Assisted Passenger Communication Systems	Woman	210	3.87	0.69	-	0.006*
	Male	191	4.11	0.71	2,784	
Corporate Trust	Woman	210	3.98	0.67	-	0.012*
	Male	191	4.16	0.69	2,512	
Digital Literacy	Woman	210	4.09	0.65	-	0.003*
	Male	191	4.28	0.61	2,946	
Passenger Experience	Woman	210	4.01	0.68	-	0.002*
	Male	191	4.28	0.61	3,107	

Male	191	4.23	0.63
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*p < 0.05

The results of the independent samples t-test based on gender revealed significant differences ($p < 0.05$) in participants' perceptions of AI-powered passenger communication systems, levels of corporate trust, digital literacy, and passenger experiences. Male participants had higher average scores than female participants in all variables. This finding indicates that male participants have a more positive view of AI-powered communication systems, a higher level of trust in airlines, greater proficiency in using digital technologies, and a more positive perception of overall passenger experiences.

Table 6. Age To their groups According to AI - Powered Passenger Communication Systems, Corporate Security, Digital Literacy and Passenger Experience Their Scores Comparison

Variable	Age Group	n	Average	SS	F	p
Artificial Intelligence Assisted Passenger Communication Systems	18-25	85	4.28	0.54	8,462	0.000*
	26-35	127	4.12	0.61		
	36-45	108	3.89	0.70		
	46 and on	81	3.67	0.76		
Corporate Trust	18-25	85	4.18	0.60	4,128	0.007*
	26-35	127	4.12	0.66		
	36-45	108	4.01	0.71		
	46 and on	81	3.92	0.73		
Digital Literacy	18-25	85	4.45	0.49	16,742	0.000*
	26-35	127	4.27	0.57		
	36-45	108	4.05	0.63		
	46 and on	81	3.81	0.71		
Passenger Experience	18-25	85	4.21	0.58	3,684	0.012*
	26-35	127	4.16	0.61		
	36-45	108	4.07	0.68		
	46 and on	81	3.95	0.72		

*p < 0.05

The results of the one-way analysis of variance conducted according to age groups show that there are statistically significant differences in participants' perceptions of AI-supported passenger communication systems, levels of institutional trust, digital literacy, and passenger experiences ($p < 0.05$).

According to the research findings, participants in the 18-25 age group, in particular, were found to have higher perceptions of AI-powered passenger communication systems and higher levels of digital literacy compared to other age groups. A partial decrease in perception and proficiency in using digital technologies was observed as age increased. Similarly, younger participants were found to have more positive evaluations of passenger experiences and trust in airlines.

Table 7. By Educational Attainment AI - Powered Passenger Communication Systems, Corporate Security, Digital Literacy and Passenger Experience Their scores Comparison

Variable	Educational Status	n	Average	SS	F	p
Artificial Intelligence Assisted Passenger Communication Systems	High school	74	3.71	0.75	7,584	0.000*
	Front Licence	62	3.89	0.70		
	Licence	187	4.05	0.66		
	Postgraduate	78	4.22	0.61		
Corporate Trust	High school	74	3.89	0.72	4,123	0.007*
	Front Licence	62	4.01	0.68		
	Licence	187	4.08	0.66		
	Postgraduate	78	4.24	0.60		
Digital Literacy	High school	74	3.76	0.71	18,441	0.000*
	Front Licence	62	4.01	0.64		

	Licence	187	4.23	0.57		
	Postgraduate	78	4.42	0.49		
Passenger Experience	High school	74	3.91	0.71	5,267	0.002*
	Front Licence	62	4.02	0.66		
	Licence	187	4.16	0.62		
	Postgraduate	78	4.27	0.58		

*p < 0.05

Education to the situation according to performed only directional variance analysis the results , participants artificial intelligence supported traveller communication systems perceptions , corporate trust levels , digital literacy And traveller experiences between significant differences that This shows (p<0.05).

Participants education level as it rises artificial intelligence supported communication to their systems towards perceptions more positive halo came It has been determined .Specifically postgraduate education to the level owner participants both digitally literacy and passenger experience their scores other to groups according to more high is It is observed .The findings relate to education .level digital technologies adaptation , technological from services utilization And airline services evaluation in their processes important One variable that to emerge It places .

Table 8. Comparison of AI-Powered Passenger Communication Systems, Corporate Trust, Digital Literacy, and Passenger Experience Scores Based on Airline Usage Frequency.

Variable				Airline Use	n	Average	SS	F	p
				Frequency					
Artificial Intelligence Communication Systems	Assisted	Passenger	Once or twice a year		148	3.78	0.74	9,624	0.000*
				3-5 times a year	136	3.96	0.69		
				6-10 times a year	71	4.17	0.61		
				10 times a year And on	46	4.35	0.57		
Corporate Trust			Once or twice a year		148	3.91	0.72	6,183	0.000*
				3-5 times a year	136	4.05	0.67		
				6-10 times a year	71	4.19	0.59		
				10 times a year And on	46	4.31	0.55		
Digital Literacy			Once or twice a year		148	3.97	0.68	11,857	0.000*
				3-5 times a year	136	4.17	0.60		
				6-10 times a year	71	4.31	0.53		
				10 times a year And on	46	4.48	0.47		
Passenger Experience			Once or twice a year		148	3.95	0.70	8,442	0.000*
				3-5 times a year	136	4.11	0.63		
				6-10 times a year	71	4.25	0.58		
				10 times a year And on	46	4.39	0.51		

*p < 0.05

Airline use frequency according to performed only directional variance analysis the results , participants artificial intelligence supported traveller communication systems perceptions , corporate trust levels , digital literacy And traveller experiences in terms of significant differences that This shows ($p < 0.05$). The findings indicate that the airway use frequency as participants artificial intelligence supported traveller communication to their systems towards perceptions , corporate trust levels , digital their literacy And traveller your experiences increased to emerge It places .Especially 10 times a year And on trip eden passengers all in variables -most high averages owner that they are It has been determined .This situation, the weather way from its services more chic beneficiary individuals digital to systems more more familiarity what they developed And presented services more positive they evaluated It shows .

Table 9. Artificial Intelligence Assisted Passenger Communication Regression Regarding the Impact of Systems on Passenger Experience Analysis Results

Independent Variable				B	β	t	p
Artificial Intelligence Assisted Passenger Communication Systems				0.712	0.741	18,964	0.000*
R	R ²	Corrected R ²	F	p			
0.741	0.549	0.548	359,632	0.000*			

$p < 0.05$

Regression analysis results according to artificial intelligence supported traveller communication systems , passenger experience significant And positive in the direction It has an effect ($\beta = 0.741$; $p < 0.001$). The model clarity power Upon examination , artificial intelligence supported traveller communication systems traveller in your experience change approximately 54.9% disclosed It is observed that ($R^2 = 0.549$).

Argument

this research, artificial intelligence supported traveller communication systems traveller experience on it effect examined and in hand done findings, words subject systems traveller experience significant and positive in the direction that it affected to emerge He placed it. Regression analysis results, artificial intelligence supported communication applications traveller in your experience change important One section he explained This shows. This result is artificial. intelligence applications service quality increased and customer experience he developed in the direction of through studies parallelism It shows. Especially chatbots, virtual assistants and automatic to inform systems thanks to passengers faster and uninterrupted service as much as he/she can It is stated (Benbya , Davenport and Pachidi , 2020; Verhoef et al., 2009).

In the research artificial intelligence supported traveller communication systems with institutional trust between positive directional significant One relationship This finding indicates that the airway... their businesses offered digital services just technological sufficiency in terms of No, it's not the same. in time trust element also evaluated in terms of that It shows .Passengers' artificial intelligence systems while using personal data will be protected And systems Trustworthy will work towards beliefs as to the institution what they heard Confidence is also increasing .The results obtained ... results , relationship marketing theory within the framework trust customer their relationships basis determinants someone that to emerge put through studies They overlap (Morgan and Hunt, 1994; Ong, 2026).

The research One other important result, corporate trust with traveller experience between strong and significant One the relationship It is the presence of passengers. airline to their businesses what they heard trust as service processes more positive they evaluated This has been observed. This result is for the customer. experience just presented service with its quality No, it's not the same. in time service supplier to the institution towards trust it is also shaped by perception This is demonstrated. Trust is also mentioned in the literature. of feeling customer satisfaction and customer experience -most important determinants someone is This is emphasized (Morgan and Hunt, 1994; Verhoef et al., 2009).

In the research age to the variable according to in hand done findings , young participants artificial intelligence supported communication to their systems towards perceptions And digital literacy levels more high that This shows .Especially for those aged 18-25 .group technology based services more positive evaluation , digital with technologies growing generations to new systems more fast rapport that it can provide to emerge This situation is related to the Technology Adoption Model .And Unified Technology Adoption and Use Theory of basis assumptions This is supported by (Davis, 1989; Venkatesh et al ., 2003).

Education to the level related the findings also draw attention. It is attractive .Education level as it rises artificial intelligence supported to systems towards positive perception , digital literacy And traveller experience increased It

has been determined. This result is related to education. Level individuals technological systems understanding, evaluating And effective use skills he developed. It shows. Digital competence with the increase together users artificial intelligence from applications more more use the services they provided And This. Therefore service their experiences more positive they evaluated it can be said (Ng, 2012).

Airline use frequency according to done in analyses, frequently trip eden passengers artificial intelligence supported communication systems, corporate trust, digital literacy And traveller experience in terms of more high points owner that they are. This situation has been observed with services. more more interaction Koran individuals to systems familiarity that he won And digital from applications more more that you can benefit from. It shows. Usage experience as technological to systems towards perception positive in the direction developed in the direction of research. This the finding. This is supported by (Venkatesh et al., 2012; Sharma, 2026).

The research theoretical from the perspective -most important from the findings someone, corporate trust mediation to his role related. These are the results obtained. findings, artificial intelligence supported traveller communication systems traveller experience on it effect important to the extent institutional trust through that it happened. This shows that the passengers technological systems while evaluating just technical features not, service supplier to the institution what they heard trust also takes into account what they received to emerge. It places. Other One. In other words, trust feeling artificial intelligence applications traveller to your experience transformation providing critical One mechanism aspect can be evaluated (Morgan and Hunt, 1994).

In the research digital literacy regulator effect related in hand done. The results are also noteworthy. It's attractive. Digital literacy level high the one which... passengers artificial intelligence supported from systems more more benefited And more positive experiences the ones they lived. It has been determined. In contrast digital competence low in individuals same systems effect more annoyed where he stayed. This is evident. This result is digital. transformation in their processes users technological skills take into consideration to be taken that. It shows. Airline their businesses different user to their profiles suitable digital communication strategies improvements importance. It carries (Ng, 2012; Venkatesh et al., 2003).

Generally when evaluated research results, artificial intelligence supported traveller communication systems aviation in the sector traveller experience developer important. One element that to emerge. It places. However, this effect to emerge in the exit institutional trust and digital literacy like variables decisive role played. It is understood. Therefore, airline their businesses just technological investments their focus sufficient not the same in time trust forming communication policies improvements and passengers digital their qualifications supportive applications their orientations. This approach is necessary for sustainability. customer satisfaction and rivalry advantage in terms of important contributions will provide (Benbya et al., 2020; Verhoef et al., 2009; Ng, 2012).

Conclusion

This research was conducted in the Turkish Republic of Northern Cyprus. activity showing airline businesses in the context artificial intelligence supported traveller communication systems traveller experience on it effect examined; corporate trust mediation role and digital literacy regulator effect the research has been evaluated. results, artificial intelligence supported traveller communication systems traveller experience significant and positive in the direction that it affected to emerge. He placed it. Especially digital communication technologies offered fast back notification, personalized service and accessibility possibilities passengers service quality towards perceptions strengthened. It has been determined.

In the research in hand done findings, artificial intelligence supported communication systems institutional trust positive. One effect owner that it has shown. Passengers' airline to their businesses towards trust levels as it increases, in general traveller their experiences also positive evaluated detection. This result is technological. innovations customer to your experience contribution just technical with competence annoyed not, the same in time institutional trust with its element support that to emerge. It is placing. It has been realized. mediation analysis results, corporate trust artificial intelligence supported traveller communication systems with traveler experience between in the relationship important. One mediation role undertaking has shown. Other One in other words, artificial intelligence applications traveller experience in its development to the institution heard trust basis. One mechanism aspect to emerge. This situation arises. This is the airline. their businesses technological investments trust creator communication with their strategies their support importance. This shows. The research. One other important the result, digital literacy regulator effect. It is related. The findings are digital. literacy level high the one which... passengers' artificial intelligence supported communication from their systems more more benefited And These systems more positive that he evaluated to emerge. It has placed it. Digital technologies judge individuals service processes more effective their use, artificial intelligence applications traveller experience on it its effect. It strengthens.

Demographic variables related analyses, age, education level and airline use frequency like variables research variables on significant differences that he created. It has shown. Especially youth, education level high and chic trip eden

passengers' artificial intelligence supported to systems towards perceptions and traveller your experiences more positive is It has been determined. These results are digital. transformation in their process's user profiles take into consideration taking necessity to emerge It places. Result as, artificial intelligence supported traveller communication systems nowadays aviation in the sector customer satisfaction and traveller experience increasing strategic vehicles between place It is taking. However, this from systems expected full benefit in hand to be able to for institutional trust strengthening and passengers' digital literacy levels increase It is required. Airline their businesses technology investments person focused communication with their policies integration, sustainable rivalry advantage in hand to do and traveller satisfaction to increase important contributions will provide.

Suggestions

- Airline businesses, artificial intelligence supported traveller communication systems by developing to the passengers more fast, personalized and uninterrupted service should provide.
- Passengers to the institution heard trust increase for data security, privacy and transparency principles importance should be given.
- Digital literacy level low to the passengers towards to inform and use guides should be prepared.
- Artificial intelligence applications person with the support of together by customer satisfaction increase must be provided.
- Airline businesses traveller back notifications organised aspect by evaluating artificial intelligence systems continually It should be improved.
- In the future will be done in research different countries and airline companies' comparative aspect It can be examined.

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THE IMPACT OF GREEN TRANSFORMATIVE LEADERSHIP ON GREEN BUSINESS ETHICS

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ABSTRACT

The aim of this research is to determine the impact of green transformative leadership perceptions of individuals working in the service sector in the TRNC on green business ethics. The universe of the research consists of individuals working in the service sector in the TRNC, and data were obtained from 381 participants within the scope of the study. In the research, a quantitative research approach was adopted and a relational survey model was used. The data were collected through a personal information form, the Green Transformative Leadership Scale and the Green Business Ethics Scale. The data obtained were analyzed with the SPSS program; frequency, percentage, arithmetic mean, standard deviation, reliability analysis, normality analysis, independent sample t-test, one-way analysis of variance, Pearson correlation analysis and regression analysis were applied. As a result of the research, it was determined that the participants' perceptions of green transformative leadership and green business ethics were at a high level. As a result of the correlation analysis, a positive and significant relationship was found between green transformative leadership and green business ethics. As a result of the regression analysis, it was determined that green transformative leadership had a positive and significant effect on green business ethics. Accordingly, it has been concluded that green transformative leadership behaviors are an important element that strengthens employees' perceptions of green business ethics.

Keywords: Green transformative leadership, green business ethics, environmental ethics, work ethics, TRNC.

1. Introduction

1.1. Problem Situation

Today, the increase in environmental problems on a global scale makes it necessary for businesses to consider their environmental responsibilities as well as their economic goals. Climate change, depletion of natural resources, environmental pollution, carbon emissions and sustainable development goals lead organizations to re-evaluate their management approaches on the basis of environmental sensitivity. While organizational success is mostly evaluated in terms of economic performance, efficiency and competitiveness in traditional management approaches, environmental sustainability has become one of the main factors affecting the long-term success of organizations (Chen & Chang, 2013). This change necessitates a reconsideration of leadership approaches on the axis of environmental responsibility. The realization of environmental sustainability goals in organizations depends on the use of environmentally friendly technologies, as well as the adoption of environmental values by employees and ethical environmental behaviors in business processes. The attitudes and behaviors of leaders are as effective as organizational policies in the development of environmentally sensitive behaviors of employees (Robertson & Barling, 2013).

The behaviors of leaders on environmental issues shape employees' perceptions of environmental responsibility, their participation in eco-friendly practices, and their commitment to sustainability goals. At this point, green transformative leadership stands out as an important leadership approach that motivates employees in line with environmental goals, encourages environmentally friendly behaviors and contributes to the formation of a sustainable organizational culture (Graves, Sarkis, & Zhu, 2013).

Green transformative leadership is considered as an expanded form of transformational leadership approach with the dimension of environmental sustainability. In this leadership approach, leaders act as role models for employees on environmental issues, create an environmental vision, support green innovation, and improve employees' environmental awareness. Environmentally friendly behaviors of leaders are observed by employees and contribute to the spread of environmental responsibility culture within the organization (Singh, Del Giudice, Chierici, & Graziano, 2020). Through green transformative leadership, environmental sustainability does not remain a temporary practice within the organization; It becomes a common value that employees adopt, share and reflect on their business processes. This ensures that environmentally friendly behaviors are a part of the organizational culture rather than individual efforts. Internalizing environmental goals is considered important for the development of green business ethics (Robertson & Barling, 2013).

Green business ethics refers to the fact that businesses carry out their activities in line with the principles of environmental responsibility, protection of natural resources, sustainability, environmental justice and sensitivity to future generations. This understanding requires businesses to achieve their economic goals while not harming the environment, using resources consciously, and considering their environmental impact as an ethical responsibility (DesJardins, 2013). The strengthening of green business ethics in organizations is possible when employees adopt environmental ethical values and reflect these values in their daily business behaviors. Leadership behaviors are seen as a determining factor in the transformation of environmental ethical values into employee behaviors. Green transformative leaders convey environmental values to employees, support eco-friendly practices, and increase employees' awareness of environmental responsibility (Crane & Matten, 2016). Leaders' consistent, reliable and exemplary behavior on environmental issues strengthens employees' commitment to environmental ethical values. This can lead to positive results such as energy saving, recycling, efficient use of resources, reduction of environmental risks and development of green organizational citizenship behaviors in organizations (Kim, Kim, Han, Jackson, & Ployhart, 2017). The embedding of environmental ethical values in the organizational culture contributes to the employees' seeing environmentally friendly behaviors as a natural part of organizational responsibility, not as an individual choice. Increasing the environmental responsibility awareness of employees strengthens the environmental performance of the organization and facilitates the achievement of sustainability goals (Ones & Dilchert, 2012).

In organizations operating in the TRNC, the reflection of the understanding of environmental sustainability on employee behavior and organizational culture is becoming more and more important. Issues such as environmental sensitivities brought about by being an island country, the limitation of natural resources, energy use, waste management and environmental protection practices make environmental responsibility more visible for organizations in the TRNC. This situation makes it an important necessity to develop environmentally friendly leadership behaviors and green business ethics in organizations.

There are studies in the literature showing that green transformative leadership has positive effects on environmental performance, green innovation, environmental citizenship behavior and environmental awareness of employees. Despite this, it is seen that studies directly addressing the impact of green transformative leadership behaviors on employees' perceptions of green business ethics in the TRNC sample are limited. This limitation makes it important to examine the relationship between green transformative leadership and green business ethics in the context of the TRNC.

The problem situation of this research is to determine the impact of green transformative leadership on green business ethics in the TRNC. Within the scope of the research, it is examined to what extent green transformative leadership behaviors affect employees' perceptions of environmental ethical values, how the understanding of environmental responsibility is strengthened within the organization, and what role leadership behaviors play in the development of green business ethics.

1.2. Purpose of the Research

The aim of this research is to determine the impact of green transformative leadership on green business ethics in the TRNC. In this research, answers to the following questions are sought:

1. What is the perception level of green transformative leadership of employees in the TRNC?
2. What is the perception level of green business ethics of employees in the TRNC?
3. Is there a significant relationship between the green transformative leadership perceptions of employees in the TRNC and their perceptions of green business ethics?
4. Does green transformative leadership have a meaningful impact on green business ethics?
5. Do the key dimensions of green transformative leadership have a meaningful impact on green business ethics?
6. Do the green transformative leadership perceptions of employees in the TRNC differ significantly according to demographic variables?
7. Do the perceptions of green business ethics of employees in the TRNC differ significantly according to demographic variables?

1.3. Importance of Research

This research is important in terms of examining the relationship between green transformative leadership and green business ethics in the TRNC sample. The adoption of environmental sustainability goals in organizations is closely related to employees' commitment to environmental ethics and the power of leaders to encourage environmentally friendly behaviors. For this reason, it is thought that the research will contribute to the development of sustainability culture in organizations, the strengthening of the understanding of environmental responsibility and the spread of green business ethics behaviors (Robertson & Barling, 2013; Ones & Dilchert, 2012).

The research is also important in terms of providing data on practices related to environmental responsibility and sustainable management approach in the TRNC. It is considered that the findings obtained will guide managers

in developing green leadership behaviors, increasing the environmental awareness of employees and strengthening green business ethics within the organization.

2. Conceptual Framework

2.1. Green Transformative Leadership

Green transformative leadership is defined as the reshaped form of the transformational leadership approach with an environmental sustainability perspective. Increasing environmental problems, climate change, carbon emissions, decrease in energy resources and sustainable development goals make it necessary for businesses to increase their environmental performance. In this process, leaders are expected to put environmental responsibilities at the center of organizational goals as well as economic and organizational goals. Green transformative leadership refers to a leadership approach that motivates employees in line with environmental goals, encourages environmentally friendly behaviors, and leads to the formation of a sustainable organizational culture (Singh, Del Giudice, Chierici, & Graziano, 2020).

Green transformative leadership is based on the reinterpretation of the idealized impact, inspirational motivation, intellectual stimulation and individual interest dimensions of transformational leadership within the framework of environmental sustainability. Leaders aim to develop environmentally friendly behaviors as well as organizational performance of employees. Making environmental goals a part of daily business processes is among the main functions of green transformative leadership (Chen & Chang, 2013).

Green transformative leaders see environmental sustainability as one of the key elements of the organizational vision. It sets environmental performance targets, supports sustainable production and consumption, and develops practices to increase the environmental awareness of employees. Leaders' adherence to environmental values is effective in developing positive attitudes towards the environment (Wang, Li, & Yin, 2024).

Environmental visioning is one of the hallmarks of green transformative leadership. Leaders set environmentally friendly goals for the future of the organization and motivate employees to achieve these goals. A strong environmental vision makes it easier for employees to adopt sustainability practices and increases their voluntary contributions to environmental performance (Begum, Xia, Ali, Awan, & Ashfaq, 2022).

Green transformative leadership also supports employees' environmental innovation behaviors. Since solving environmental problems requires innovative practices, leaders encourage employees to generate environmentally friendly ideas, participate in green innovation activities and develop creative solutions to environmental problems. This strengthens the competitive advantages of organizations as well as their environmental performance (Zhang, Sun, Yang, & Wang, 2023).

Green transformative leadership has significant effects on the development of environmental citizenship behaviors of employees. Environmental citizenship behavior refers to environmentally friendly behaviors that employees voluntarily perform beyond their job descriptions. These behaviors include saving energy, contributing to recycling, reducing resource use, and raising environmental awareness. Green transformative leaders play a guiding role in employees' adoption of these behaviors (Kim, Kim, Han, Jackson, & Ployhart, 2017).

2.2. The Concept of Green Business Ethics

Traditional management approaches of businesses focused on economic gain are now considered together with sustainable management approaches that include environmental and social responsibilities. Issues such as global climate change, rapid depletion of natural resources, environmental pollution, and deterioration of ecological balance necessitate businesses to reevaluate their operations ethically and environmentally. Green business ethics, which emerged as a result of the combination of environmental sustainability and ethical management principles, refers to the fact that businesses carry out their activities in an environmentally friendly, sustainable and ethical manner (DesJardins, 2013).

Green business ethics encompass businesses adhering to ethical principles while fulfilling their environmental responsibilities. Conscious use of natural resources, prevention of environmental damage, protection of the rights of future generations and support for sustainable development are among the basic elements of this understanding. Green business ethics emphasize that businesses should operate without harming the environment and taking into account their social responsibilities while achieving their economic goals (Crane & Matten, 2016).

The principle of environmental responsibility is at the core of green business ethics. Environmental responsibility refers to the decision-making of businesses by taking into account the environmental impacts that may arise as a result of their activities. According to this understanding, businesses should develop voluntary practices to protect the environment beyond complying with legal regulations. Environmental responsibility awareness plays an important role in helping businesses achieve their sustainability goals and gain trust with society (Schaltegger, Burritt, & Petersen, 2017).

Sustainable use of natural resources is one of the important dimensions of green business ethics. The limited resources require businesses to act more consciously in their production and consumption processes. Efficient

use of energy resources, reducing water consumption, supporting recycling activities and reducing the amount of waste are among the basic practices evaluated within the scope of green business ethics. These practices support environmental sustainability and contribute to the long-term success of businesses (Hart & Dowell, 2011).

Green business ethics are also associated with the understanding of environmental justice. Environmental justice means that environmental damages are not burdened on certain segments of society and that all individuals can benefit from environmental resources fairly. Businesses have to take into account the effects of environmental risks on society while carrying out their activities. Environmental pollution and unconscious use of natural resources affect future generations as well as today's societies. Therefore, green business ethics also includes the responsibilities of businesses towards future generations (Velasquez, 2018).

The importance of stakeholder theory is one of the factors that support the development of green business ethics. According to stakeholder theory, businesses are responsible for their employees, customers, suppliers, local communities and the environment as well as their shareholders. This understanding makes reducing environmental impacts and developing sustainable practices one of the main areas of responsibility of businesses. Green business ethics provides businesses with an ethical framework for fulfilling these responsibilities (Freeman, Harrison, Wicks, Parmar, & De Colle, 2010).

The importance of green business ethics becomes more evident with the increase in consumers' awareness of environmental issues. Today, consumers prefer environmentally friendly businesses more as well as expecting quality products and services. Businesses that fulfill their environmental responsibilities gain customer trust, strengthen their brand values, and gain a competitive advantage. In this respect, green business ethics is considered as a strategic management element as well as an ethical requirement (Porter & Kramer, 2011).

Method 3

3.1. Research Model

This research was carried out in line with the quantitative research approach. Quantitative research is an approach based on measuring variables through numerical data and analyzing the obtained data with statistical methods (Creswell, 2014). Relational survey model was used in the research. A relational survey model is a research model that aims to determine the existence and direction of a relationship between two or more variables (Karasar, 2020). In this context, the independent variable in the research was determined as green transformative leadership and the dependent variable was determined as green business ethics.

3.2. Universe and Sample

The universe of the research consists of individuals working in the service sector in the TRNC. Convenience sampling method was used in the research. Convenience sampling is a sampling method based on collecting data from individuals who are willing and accessible to participate in the research (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, & Demirel, 2020). In this direction, the sample of the research consists of 381 participants working in the service sector in the TRNC.

3.3. Data Collection Tools

A questionnaire form was used as a data collection tool in the research. The questionnaire form consists of three parts. In the first part, there is a personal information form to determine the demographic characteristics of the participants. In the second part, the Green Transformative Leadership Scale, developed by Chen and Chang (2012) and adapted to Turkish by Kerse et al. (2021), was used to measure employees' perceptions of green transformative leadership. The scale consists of 6 items and a single dimension. In the third part, the Green Business Ethics Scale, whose validity and reliability study was conducted by Bayram and Öztirak (2023), was used to measure employees' perceptions of green business ethics. The scale consists of two sub-dimensions, Environmental Ethics and Work Ethics, and 20 items. A 5-point Likert type rating was used in both scales.

3.4. Data Analysis

The data obtained within the scope of the research were analyzed through the SPSS program. Frequency, percentage, arithmetic mean, standard deviation, reliability analysis, normality analysis, independent sample t-test, one-way analysis of variance, Pearson correlation analysis and regression analysis were used in the analysis of the data.

Table 1. Normality of Scales and KMO Analysis Results

Scale / Sub-Dimension	N	Skewness	Kurtosis	KMO	Bartlett χ^2	SD	p
Green Transformative Leadership Scale	381	-,421	,386	,872	986,214	15	,000
Green Business Ethics Scale	381	-,318	,274	,914	3247,586	190	,000
Environmental Ethics Sub-Dimension	381	-,356	,442	,901	2148,763	66	,000
Work Ethics Sub-Dimension	381	-,284	,319	,846	1186,492	28	,000

Table 1 presents the normality and KMO analysis results of the scales. The fact that the skewness and kurtosis values are within acceptable limits indicates that the data are in accordance with the normal distribution. KMO values are .872 for the Green Transformative Leadership Scale; .914 for the Green Business Ethics Scale; It was calculated as .901 for the Environmental Ethics sub-dimension and .846 for the Work Ethics sub-dimension. The fact that the results of the Bartlett Sphericity Test were significant in all scales and sub-dimensions shows that the data are suitable for factor analysis ($p < .05$).

Table 2. Reliability Analysis Results for Scales

Scale / Sub-Dimension	Number of Articles	Cronbach Alpha (α)	Reliability Level
Green Transformative Leadership Scale	6	,921	Highly reliable
Green Business Ethics Scale	20	,944	Highly reliable
Environmental Ethics Sub-Dimension	12	,932	Highly reliable
Work Ethics Sub-Dimension	8	,887	Highly reliable

Table 2 shows the reliability analysis results of the scales. Cronbach's Alpha coefficients were .921 for the Green Transformative Leadership Scale; .944 for the Green Business Ethics Scale; It was determined as .932 for the Environmental Ethics sub-dimension and .887 for the Business Ethics sub-dimension. The values obtained are above .70, indicating that the scales are reliable and can be used in further statistical analysis..

4. Findings

4.1. Demographic Characteristics

The frequency and percentage distributions of the demographic characteristics of 381 service sector employees participating in the research are included.

Table 3. Distribution of Demographic Characteristics of Participants

Variable	Group	f	%
Gender	Male	171	44,88
	Women	210	55,12
Age	25'ten to	64	16,80
	26-35	151	39,63
	36-45	108	28,35
	45 and above	58	15,22
Marital Status	Married	222	58,27
	Single	159	41,73
Education Status	Primary School	10	2,62
	Secondary School	20	5,25
	High School	115	30,18
	Associate degree	70	18,37
	Undergraduate	130	34,12
	Graduate	36	9,45
Average Monthly Income	Income less than expenditure	145	38,06
	Income is equivalent to expenditure	169	44,36
	Income is more than expenditure	67	17,59
Operating Status	Administrator / Division Manager	72	18,90
	Employees	309	81,10
Work Experience	0-5 years	112	29,40
	6-10 years	98	25,72
	11-15 years	74	19,42
	16-20 years	54	14,17
	21 years and over	43	11,29

Variable	Group	f	%
Total Professional Experience	0-5 years	83	21,78
	6-10 years	97	25,46
	11-15 years	88	23,10
	16-20 years	59	15,49
	21 years and over	54	14,17
Total		381	100,00

Table 3 presents the distributions of the demographic characteristics of the participants. 55.12% of the participants were female and 44.88% were male. The highest rate in the age variable is in the 26-35 age group with 39.63%; In terms of marital status, it is seen that 58.27% of the participants are married. The highest rate in education belongs to undergraduate graduates with 34.12%. In terms of average monthly income, 44.36% of the participants stated that their income was equal to their expenses. According to employment status, 81.10% of the participants are employees and 18.90% are managers/unit managers. The highest rate in terms of work experience is in the 0-5 year range with 29.40%; In terms of total professional experience, the highest rate is in the range of 6-10 years with 25.46%.

4.2. Descriptive Statistics

Under this heading, the arithmetic mean and standard deviation values of the Green Transformative Leadership Scale and the Green Business Ethics Scale and their sub-dimensions used in the research are presented.

Table 4. Descriptive Statistics on Scale and Sub-Dimensions

Scale / Sub-Dimension	N	Min.	Max.	Average ($\bar{X}$)	Std. Deviation
Green Transformative Leadership	381	1,67	5,00	4,18	0,61
Green Business Ethics	381	2,05	5,00	4,09	0,55
Environmental Ethics	381	2,08	5,00	4,15	0,58
Work Ethics	381	1,88	5,00	4,01	0,64

When Table 4 is examined, it is seen that the participants' perceptions of Green Transformative Leadership are at a high level ($\bar{X}$ =4.18; SD=0.61). This result shows that employees perceive their managers as leaders who support environmental sustainability and encourage environmentally friendly behaviors. The general average of the Green Business Ethics Scale is determined as 4.09. This value shows that the participants' perceptions of green business ethics practices in the organizations they work for are high. When the sub-dimensions are examined, it is seen that the highest average is in the Environmental Ethics sub-dimension ($\bar{X}$ =4.15; SD=0.58). The mean of the Work Ethics sub-dimension is calculated as 4.01 (SD=0.64). The averages obtained in both sub-dimensions show that the participants have positive perceptions of environmental ethics and work ethics.

4.3. Difference Analysis Between Green Transformative Leadership Scale and Demographic Variables

Table 5. Comparison of Green Transformative Leadership Scale Scores by Gender

Gender	N	Location.	SS	t	p
Male	171	4,14	0,63	-1,214	,225
Women	210	4,21	0,59		

According to Table 5, the Green Transformative Leadership Scale scores did not differ significantly according to the gender variable ($p>.05$).

Table 6. Comparison of Green Transformative Leadership Scale Scores by Age

Age	N	Location.	SS	F	p	Difference
25'ten to	64	4,06	0,66	3,184	,024	36-45 > 25'ten az
26-35	151	4,17	0,60			
36-45	108	4,29	0,55			
45 and above	58	4,16	0,64			

According to Table 6, the scores of the Green Transformative Leadership Scale differ significantly according to the age variable ($p<.05$). The difference is between the age group of 36-45 years and the age group of less than 25.

Table 7. Comparing Green Transformative Leadership Scale Scores by Marital Status

Marital Status	N	Location.	SS	t	p
Married	222	4,22	0,58	1,587	,113
Single	159	4,12	0,64		

According to Table 7, the Green Transformative Leadership Scale scores did not differ significantly according to the marital status variable ($p > .05$).

Table 8. Comparison of Green Transformative Leadership Scale Scores by Educational Status

Education Status	N	Location.	SS	F	p	Difference
Primary School	10	3,96	0,72	2,671	,022	Graduate > Primary School
Secondary School	20	4,03	0,68			Extra injection > Lise
High School	115	4,09	0,64			
Associate degree	70	4,15	0,61			
Undergraduate	130	4,23	0,56			
Graduate	36	4,38	0,49			

According to Table 8, the scores of the Green Transformative Leadership Scale differ significantly according to the educational status variable ($p < .05$). The difference is between postgraduate graduates and elementary and high school graduates.

Table 9. Comparison of Green Transformative Leadership Scale Scores Based on Average Monthly Income

Average Monthly Income	N	Location.	SS	F	p	Difference
Income is less than expenditure	145	4,08	0,66	4,126	,017	Income is more than expenditure > Income is less than expenditure
Income is equivalent to expenditure	169	4,19	0,57			
Income is more than expenditure	67	4,31	0,52			

According to Table 9, the Green Transformative Leadership Scale scores differ significantly according to the average monthly income variable ($p < .05$). The difference is between participants whose income is more than their expenses and those whose income is less than their expenses.

Table 10. Comparison of Green Transformative Leadership Scale Scores by Employment Status

Operating Status	N	Location.	SS	t	p
Administrator / Division Manager	72	4,34	0,51	2,561	,011
Employees	309	4,14	0,62		

According to Table 10, the scores of the Green Transformative Leadership Scale differ significantly according to the working status variable ($p < .05$). The average of the participants who are managers / unit managers is higher.

Table 11. Comparison of Green Transformative Leadership Scale Scores Based on Work Experience

Work Experience	N	Location.	SS	F	p	Difference
0-5 years	112	4,07	0,66	2,498	,043	11-15 years > 0-5 years
6-10 years	98	4,16	0,60			
11-15 years	74	4,30	0,53			
16-20 years	54	4,21	0,59			
21 years and over	43	4,18	0,63			

According to Table 11, the Green Transformative Leadership Scale scores differ significantly according to the work experience variable ($p < .05$). The difference is between participants with 11-15 years of work experience and participants with 0-5 years of work experience.

Table 12. Comparison of Green Transformative Leadership Scale Scores Based on Total Professional Experience

Total Professional Experience	N	Location.	SS	F	p	Difference
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Total Professional Experience	N	Location.	SS	F	p	Difference
0-5 years	83	4,09	0,65	1,842	,120	None
6-10 years	97	4,15	0,60			
11-15 years	88	4,22	0,57			
16-20 years	59	4,27	0,55			
21 years and over	54	4,17	0,64			

According to Table 12, the scores of the Green Transformative Leadership Scale did not differ significantly according to the total professional experience variable ($p>.05$).

4.4. Difference Analysis Between Green Business Ethics Scale and Demographic Variables

Table 13. Comparison of Green Business Ethics Scale and Sub-Dimensions by Gender

Scale / Sub-Dimension	Gender	N	Location.	SS	t	p
Green Business Ethics	Male	171	4,05	0,57	-1,318	,188
	Women	210	4,12	0,53		
Environmental Ethics	Male	171	4,11	0,60	-1,227	,221
	Women	210	4,18	0,56		
Work Ethics	Male	171	3,97	0,66	-1,186	,236
	Women	210	4,05	0,62		

According to Table 13, the sub-dimensions of the Green Business Ethics Scale, Environmental Ethics and Labor Ethics did not differ significantly according to the gender variable ($p>.05$).

Table 14. Comparison of Green Business Ethics Scale and Sub-Dimensions by Age

Scale / Sub-Dimension	Age	N	Location.	SS	F	p	Difference
Green Business Ethics	25'ten to	64	3,94	0,61	3,472	,016	36-45 > 25'ten az
	26-35	151	4,08	0,54			
	36-45	108	4,20	0,50			
	45 and above	58	4,10	0,57			
Environmental Ethics	25'ten to	64	4,00	0,63	3,214	,023	36-45 > 25'ten az
	26-35	151	4,14	0,57			
	36-45	108	4,26	0,52			
	45 and above	58	4,16	0,59			
Work Ethics	25'ten to	64	3,86	0,69	2,986	,031	36-45 > 25'ten az
	26-35	151	4,00	0,63			
	36-45	108	4,12	0,58			
	45 and above	58	4,02	0,65			

According to Table 14, the sub-dimensions of the Green Business Ethics Scale, Environmental Ethics and Work Ethics differ significantly according to the age variable ($p<.05$). The difference is between the age group of 36-45 years and the age group of less than 25.

Table 15. Comparison of Green Business Ethics Scale and Sub-Dimensions by Marital Status

Scale / Sub-Dimension	Marital Status	N	Location.	SS	t	p
Green Business Ethics	Married	222	4,12	0,54	1,264	,207
	Single	159	4,05	0,56		
Environmental Ethics	Married	222	4,18	0,56	1,331	,184
	Single	159	4,10	0,60		
Work Ethics	Married	222	4,04	0,63	1,091	,276
	Single	159	3,96	0,65		

According to Table 15, the sub-dimensions of the Green Business Ethics Scale, Environmental Ethics and Work Ethics do not differ significantly according to the marital status variable ($p > .05$).

Table 16. Comparison of Green Business Ethics Scale and Sub-Dimensions by Educational Status

Scale / Sub-Dimension	Education Status	N	Location.	SS	F	p	Difference
Green Business Ethics	Primary School	10	3,82	0,69	3,105	,009	Graduate > Primary School
	Secondary School	20	3,91	0,63			Extra injection > Lise
	High School	115	4,01	0,57			
	Associate degree	70	4,09	0,55			
	Undergraduate	130	4,15	0,51			
	Graduate	36	4,32	0,46			
Environmental Ethics	Primary School	10	3,88	0,71	2,874	,015	Graduate > Primary School
	Secondary School	20	3,98	0,66			Extra injection > Lise
	High School	115	4,07	0,60			
	Associate degree	70	4,15	0,58			
	Undergraduate	130	4,20	0,54			
	Graduate	36	4,37	0,48			
Work Ethics	Primary School	10	3,74	0,76	2,761	,018	Graduate > Primary School
	Secondary School	20	3,82	0,70			
	High School	115	3,93	0,66			
	Associate degree	70	4,01	0,64			
	Undergraduate	130	4,08	0,60			
	Graduate	36	4,25	0,52			

According to Table 16, the sub-dimensions of the Green Business Ethics Scale, Environmental Ethics and Work Ethics differ significantly according to the educational status variable ($p < .05$). The difference is generally between postgraduate graduates and participants with lower levels of education.

Table 17. Comparison of Green Business Ethics Scale and Sub-Dimensions by Average Monthly Income

Scale / Sub-Dimension	Average Monthly Income	N	Location.	SS	F	p	Difference
Green Business Ethics	Income is less than expenditure	145	3,98	0,59	4,584	,011	Income is more than expenditure > Income is less than expenditure
	Income is equivalent to expenditure	169	4,10	0,53			
	Income is more than expenditure	67	4,24	0,49			
Environmental Ethics	Income is less than expenditure	145	4,04	0,61	4,216	,015	Income is more than expenditure > Income is less than expenditure
	Income is equivalent to expenditure	169	4,16	0,56			
	Income is more than expenditure	67	4,29	0,51			
Work Ethics	Income is less than expenditure	145	3,89	0,68	3,905	,021	Income is more than expenditure > Income is less than expenditure
	Income is equivalent to expenditure	169	4,02	0,62			
	Income is more than expenditure	67	4,17	0,57			

According to Table 17, the sub-dimensions of the Green Business Ethics Scale, Environmental Ethics and Labor Ethics differ significantly according to the average monthly income variable ($p < .05$). The difference is between participants whose income is more than their expenses and those whose income is less than their expenses.

Table 18. Comparison of Green Business Ethics Scale and Sub-Dimensions by Working Status

Scale / Sub-Dimension	Operating Status	N	Location.	SS	t	p
Green Business Ethics	Administrator / Division Manager	72	4,25	0,48	2,731	,007
	Employees	309	4,05	0,56		
Environmental Ethics	Administrator / Division Manager	72	4,30	0,50	2,516	,012
	Employees	309	4,11	0,59		
Work Ethics	Administrator / Division Manager	72	4,18	0,56	2,438	,015
	Employees	309	3,97	0,65		

According to Table 18, the sub-dimensions of the Green Business Ethics Scale, Environmental Ethics and Work Ethics differ significantly according to the working status variable ($p < .05$). The average of the participants who are managers / unit managers is higher.

Table 19. Comparison of Green Business Ethics Scale and Sub-Dimensions According to Work Experience

Scale / Sub-Dimension	Work Experience	N	Location.	SS	F	p	Difference
Green Business Ethics	0-5 years	112	3,98	0,60	2,946	,020	11-15 years > 0-5 years
	6-10 years	98	4,07	0,55			
	11-15 years	74	4,22	0,49			
	16-20 years	54	4,13	0,54			
	21 years and over	43	4,11	0,58			
Environmental Ethics	0-5 years	112	4,04	0,62	2,688	,031	11-15 years > 0-5 years
	6-10 years	98	4,13	0,57			
	11-15 years	74	4,28	0,50			
	16-20 years	54	4,18	0,56			
	21 years and over	43	4,15	0,60			
Work Ethics	0-5 years	112	3,89	0,68	2,421	,048	11-15 years > 0-5 years
	6-10 years	98	3,98	0,64			
	11-15 years	74	4,13	0,57			
	16-20 years	54	4,06	0,61			
	21 years and over	43	4,04	0,66			

According to Table 19, the sub-dimensions of the Green Business Ethics Scale, Environmental Ethics and Work Ethics differ significantly according to the work experience variable ($p < .05$). The difference is between participants with 11-15 years of work experience and participants with 0-5 years of work experience.

Table 20. Comparison of Green Business Ethics Scale and Sub-Dimensions According to Total Professional Experience

Scale / Sub-Dimension	Total Professional Experience	N	Location.	SS	F	p	Difference
Green Business Ethics	0-5 years	83	4,01	0,59	1,724	,144	None
	6-10 years	97	4,07	0,56			
	11-15 years	88	4,13	0,53			
	16-20 years	59	4,18	0,51			
	21 years and over	54	4,08	0,58			
Environmental Ethics	0-5 years	83	4,07	0,61	1,638	,164	None
	6-10 years	97	4,13	0,58			
	11-15 years	88	4,19	0,55			
	16-20 years	59	4,23	0,53			
	21 years and over	54	4,14	0,60			

Scale / Sub-Dimension	Total Professional Experience	N	Location.	SS	F	p	Difference
Work Ethics	0-5 years	83	3,93	0,67	1,512	,198	None
	6-10 years	97	3,99	0,64			
	11-15 years	88	4,05	0,61			
	16-20 years	59	4,10	0,59			
	21 years and over	54	4,00	0,66			

According to Table 20, the sub-dimensions of the Green Business Ethics Scale, Environmental Ethics and Work Ethics do not differ significantly according to the total professional experience variable ($p > .05$).

4.5. Correlation Analysis

Table 21. Correlation Analysis Results Between Green Transformative Leadership and Green Business Ethics and Its Sub-Dimensions

Variables	1	2	3	4
1. Green Transformative Leadership	1			
2. Green Business Ethics	,684**	1		
3. Environmental Ethics	,661**	,918**	1	
4. Work Ethics	,612**	,874**	,704**	1

$p < .01$

According to Table 21, there is a positive and significant relationship between Green Transformative Leadership and Green Business Ethics ($r = .684$; $p < .01$). There is a positive and significant relationship between Green Transformative Leadership and Environmental Ethics sub-dimension ($r = .661$; $p < .01$). There is a positive and significant relationship between Green Transformative Leadership and the Work Ethics sub-dimension ($r = .612$; $p < .01$). There is a positive and significant relationship between Green Business Ethics and Environmental Ethics sub-dimension ($r = .918$; $p < .01$). There is a positive and significant relationship between Green Business Ethics and the Work Ethics sub-dimension ($r = .874$; $p < .01$). There is a positive and significant relationship between Environmental Ethics and Business Ethics ($r = .704$; $p < .01$).

4.6. Regression Analysis

Table 22. Regression Analysis Results on the Impact of Green Transformative Leadership on Green Business Ethics

Dependent Variable	Independent Variable	B	Hrd. Hata	b	t	p	R	R ²	F	Model p
Green Business Ethics	Green Transformative Leadership	,617	,034	,684	18,253	,000	,684	,468	333,172	,000

According to Table 22, Green Transformative Leadership has a positive and significant impact on Green Business Ethics ($\beta = .684$; $p < .05$). The explanatory level of the model was determined as $R^2 = .468$. Accordingly, 46.8% of the total variance in the Green Business Ethics variable is explained by Green Transformative Leadership.

Table 23. Regression Analysis Results on the Impact of Green Transformative Leadership on Green Business Ethics Sub-Dimensions

Dependent Variable	Independent Variable	B	Hrd. Hata	b	t	p	R	R ²	F	Model p
Environmental Ethics	Green Transformative Leadership	,628	,037	,661	17,159	,000	,661	,437	294,432	,000
Work Ethics	Green Transformative Leadership	,642	,043	,612	15,091	,000	,612	,375	227,738	,000

According to Table 23, Green Transformative Leadership has a positive and significant effect on the Environmental Ethics sub-dimension ($\beta = .661$; $p < .05$). The explanatory level of the model for the Environmental Ethics sub-dimension was determined as $R^2 = .437$. Accordingly, 43.7% of the total variance in the Environmental Ethics variable is explained by Green Transformative Leadership. Green Transformative Leadership has a positive and significant effect on the Work Ethics sub-dimension ($\beta = .612$; $p < .05$). The explanatory level of the

model for the Work Ethics sub-dimension was determined as $R^2=.375$. Accordingly, 37.5% of the total variance in the Work Ethic variable is explained by Green Transformative Leadership.

Conclusion and Discussion

In this study, the effect of green transformative leadership perceptions of employees in the service sector in the TRNC on green business ethics was examined. According to the findings, it was determined that the participants' perceptions of green transformative leadership were at a high level. This result shows that employees perceive their managers as leaders who support environmental sustainability, encourage environmentally friendly behaviors and guide employees towards environmental goals. This finding aligns with the conclusions put forth by Chen and Chang (2013) on the impact of green transformative leadership on environmental vision, green innovation, and environmental performance.

In the research, it was determined that the perception of green business ethics was also at a high level. The fact that the sub-dimensions of green business ethics, environmental ethics and work ethics, also have high averages, shows that the participants have positive perceptions about environmental responsibility, conscious use of resources, sustainability and environmentally friendly working behaviors. This result aligns with the understanding of environmental responsibility emphasized by DesJardins (2013) and the evaluations of Crane and Matten (2016) that business ethics also includes environmental responsibilities.

In the analyzes made according to demographic variables, it was determined that the perception of green transformative leadership and green work ethics and its sub-dimensions did not differ significantly according to the variables of gender, marital status and total professional experience. On the other hand, significant differences were found according to the variables of age, education level, average monthly income, employment status and work experience. It was observed that the differences were generally in favor of the 36-45 age group, graduate graduates, those whose income is more than their expenses, managers/unit managers and participants with 11-15 years of work experience. This result shows that perceptions of environmental responsibility and green business ethics can vary according to individual and professional characteristics.

As a result of the correlation analysis, a positive and significant relationship was found between green transformative leadership and green business ethics. Positive and significant relationships have also been found between green transformative leadership and environmental ethics and work ethics sub-dimensions. This finding shows that as the perception of green transformative leadership increases, employees' perceptions of green work ethics also increase. The result obtained is similar to the findings of Robertson and Barling (2013) that environmentally conscious leadership behaviors strengthen the environmental behaviors of employees.

As a result of the regression analysis, it was determined that green transformative leadership has a positive and significant effect on green business ethics. Green transformative leadership accounts for 46.8% of the total variance in green business ethics. When evaluated in terms of sub-dimensions, it was seen that green transformative leadership had an explanatory effect of 43.7% on environmental ethics and 37.5% on work ethics. This result reveals that green transformative leadership is an important determinant of employees' environmental ethical values and environmentally sensitive working understanding. This finding aligns with the work of Singh, Del Giudice, Chieri, & Graziano (2020), which highlights the impact of green transformative leadership on environmental performance and green behaviors.

Overall, the research findings suggest that green transformative leadership is an important leadership approach that reinforces green business ethics. In this direction, developing leadership behaviors that support environmental sustainability in service sector enterprises will contribute to strengthening employees' perceptions of environmental ethics and work ethics.

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THE IMPACT OF INDUSTRY 4.0 MATURITY LEVEL ON COMPETITIVE STRATEGIES AND INTERNAL ENTREPRENEURSHIP TRENDS: A STUDY ON BUSINESSES

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ABSTRACT

The aim of this research is to examine the impact of Industry 4.0 maturity level on competitive strategies and internal entrepreneurship tendencies. The research was designed using a correlational survey model within the framework of a quantitative research approach. The research population consists of managers, specialists, and white-collar employees working in businesses operating in the Turkish Republic of Northern Cyprus (TRNC). A convenience sampling method was used, and the sample size was determined to be 200 participants. Data were collected through a demographic information form, the Industry 4.0 Technologies Usage Level Scale, the Competitive Strategies Scale, and the Internal Entrepreneurship Scale. The collected data were analyzed using the IBM SPSS software package; reliability analysis, descriptive statistics, normality analysis, correlation analysis, and simple linear regression analysis were applied.

The research findings show a positive and significant relationship between the Industry 4.0 maturity level and competitive strategies and internal entrepreneurship tendencies. Regression analysis revealed that the Industry 4.0 maturity level has a positive and significant effect on competitive strategies. Similarly, it was found that the Industry 4.0 maturity level also positively influences internal entrepreneurship tendencies. The findings demonstrate that digital maturity strengthens the strategic orientations of businesses and supports employees' internal entrepreneurial behaviors. This research contributes to the literature by considering the Industry 4.0 maturity level in conjunction with competitive strategies and internal entrepreneurship tendencies.

Keywords: Industry 4.0, Industry 4.0 maturity level, competitive strategies, internal entrepreneurship, digital transformation.

1. Introduction

In today's rapidly changing global business world, companies are restructuring their production, management, marketing, and innovation processes around digital transformation to survive and gain a competitive advantage. While earlier periods of industrial history were characterized by mechanization, mass production with electric power, and computer-aided automation, today we are experiencing the Fourth Industrial Revolution, where production systems are integrated with digital technologies. This transformation, called Industry 4.0, is shaped by the inclusion of technologies such as big data, the Internet of Things, cloud computing, artificial intelligence, cyber-physical systems, autonomous robots, augmented reality, and 3D printers into business processes (Acar, 2024).

Industry 4.0 offers businesses increased efficiency, flexible production, cost advantages, capacity expansion, faster decision-making, and the ability to respond more responsively to customer expectations. With digitalization, the factors determining competitiveness are also changing; corporate structure, infrastructure, innovation capacity, human resource quality, and strategic decision-making processes are regaining importance. Research conducted on foreign trade firms has shown that Industry 4.0 applications have an impact on competitive strategies, market performance, and innovation performance; and that competitive strategies have a stronger influence on market and innovation performance (Ekinci Furtana & Acar, 2024).

To understand the impact of digital transformation on businesses, the existence of technologies, as well as the level of adoption and integration of these technologies into business processes, are crucial. Industry 4.0 maturity level is considered a significant indicator of businesses' awareness, preparedness, implementation capacity, and transformation skills regarding digital technologies. A study on SMEs showed that businesses' Industry 4.0 maturity level was measured at approximately 2.5 out of 5, indicating that many businesses are still in the development phase of the digital transformation process (Akpınar et al., 2024).

The maturity level of Industry 4.0 is directly related to the competitive strategies of businesses. Cost leadership, differentiation, and focus strategies are fundamental strategic approaches that businesses use to differentiate themselves from their competitors in the market. Digital technologies offer businesses new opportunities in terms of reducing costs, accelerating processes, personalizing products and services, improving quality, and responding more flexibly to customer demands. In this process, data management, information sharing, and organizational

learning become decisive in transforming digital transformation into strategic value (Kolyasnikov & Kelchevskaya , 2020).

As Industry 4.0 maturity increases, the capacity of businesses to generate innovation, seize opportunities, and bring entrepreneurial behaviors into the organization also gains importance. Internal entrepreneurship is related to employees developing new ideas, recognizing opportunities, taking risks, and producing innovative solutions by acting with an entrepreneurial mindset within the organization. When employees' innovative behaviors are combined with supportive organizational conditions, businesses are more likely to adapt to change, grow, and gain a competitive advantage (Morais et al., 2021).

Internal entrepreneurship is becoming a strategic necessity for businesses undergoing digital transformation. The rapid pace of technological change makes it difficult to manage innovations from a single center, necessitating more active employee participation in idea generation, problem-solving, and opportunity assessment processes. Businesses that create space for entrepreneurial behavior among their employees strengthen their innovation capacity, employee engagement, organizational agility, and sustainable competitive advantage (Vengrouskie , 2025).

The relationship between Industry 4.0 and entrepreneurship is transforming not only internal organizational processes but also entrepreneurial ecosystems. Digital technologies enable the development of new business models, increase cross-sector collaborations, and allow innovative ventures to reach the market faster. Technologies such as artificial intelligence, big data, automation, and the Internet of Things contribute to businesses developing more flexible, adaptable, and innovative structures (Kumar et al., 2023).

entrepreneurial and innovation orientation on competitive strategies show that innovative and entrepreneurial behaviors are crucial in enabling businesses to gain a competitive advantage. A study on family businesses found a positive and significant relationship between entrepreneurial orientation and competitive strategies; innovation orientation was also found to have a significant impact on competitive strategies (Asfour , 2023).

The aim of this research is to examine the impact of Industry 4.0 maturity level on the competitive strategies and internal entrepreneurship tendencies of businesses. Studies in the literature address the relationship between Industry 4.0 applications and competitive strategies, market performance, and innovation performance; the connection between internal entrepreneurship, innovation , and competitiveness is also discussed in various studies. The limited number of studies that examine Industry 4.0 maturity level together with competitive strategies and internal entrepreneurship tendencies forms the starting point of this research. The study is expected to contribute to the literature on digital transformation, strategic management, and internal entrepreneurship; and to reveal how technological maturity relates to strategic decisions and internal entrepreneurial behaviors within organizations.

2. Conceptual Framework

2.1. The Concept and Development of Industry 4.0

computing , autonomous robots, simulation, augmented reality, system integration, additive manufacturing, and cybersecurity are among the fundamental components of Industry 4.0. Göv & Erdoğan, 2020).

The historical trajectory of industrial revolutions shows that Industry 4.0 emerged as a continuation of previous transformations. The First Industrial Revolution increased production capacity with steam power and mechanization, the Second Industrial Revolution changed the production structure with electrical energy and mass production, the Third Industrial Revolution gave production processes a digital character with computers, electronic systems, and automation technologies, and the Fourth Industrial Revolution combined physical production systems with digital technologies to create a more connected, autonomous, and data-driven production approach (Yasim, 2020).

The concept emerged in Germany in 2011 and quickly became a significant topic in industrial policies, business strategies, and academic studies. Initially associated with production systems, Industry 4.0 has gradually expanded to include different areas such as management, human resources, marketing, finance, logistics, education, and public policies. The stronger integration of digital technologies into business processes and daily life has transformed Industry 4.0 from a narrow production model into a comprehensive transformation process (Yıldırım, 2020).

In the functioning of Industry 4.0, the ability of machines, products, and systems to communicate with each other plays a decisive role. Cyber-physical systems connect the physical production environment with digital systems, while the Internet of Things enables data sharing between machines, devices, and products. Big data and advanced analytical techniques transform intense data flow into meaningful information; cloud computing offers a flexible infrastructure for storing, processing, and sharing data. Autonomous robots provide speed, quality, and efficiency in production processes, while additive manufacturing allows for the production of personalized products at lower costs. Simulation and augmented reality stand out as supporting technologies that reduce the risk of errors in design, training, maintenance, and operation processes (Xu et al., 2021).

The value of Industry 4.0 for businesses is related not so much to the existence of these technologies, but to the level at which these technologies are adopted, implemented, and transformed into strategic value. The maturity

level concept is an important metric used to evaluate businesses' digital competencies, technological infrastructure, organizational structure, human resources, operational capacity, and strategic transformation ability. Maturity models make the current digital state of businesses visible and contribute to identifying areas requiring improvement (Santos & Martinho , 2020).

The success of digital transformation is closely related to management support, employee competence, financial resources, organizational readiness, competitive pressure, and a suitable organizational culture, in addition to technical investments. Businesses need to align Industry 4.0 technologies with strategic goals, involve employees in the process, and develop a management approach that supports change. Technology investments, only when supported by the necessary knowledge, skills, and organizational alignment, create opportunities for businesses to increase productivity, flexibility, cost advantages, improve quality, make faster decisions, and respond more responsively to customer demands (Khin & Kee , 2022).

2.2. Competitive Strategies

Competitive strategies refer to the long-term orientations that businesses follow to gain an advantage over their competitors in the market in which they operate, to maintain their profitability, and to establish a sustainable position. In highly competitive sectors, achieving lasting superiority with similar products, services, and processes becomes difficult; determining in which market, to which customer group, with which value proposition, and with which resources they will compete becomes a strategic necessity for businesses (Acar, 2020).

In the strategic management literature, competitive strategies are mostly discussed through cost leadership, differentiation, and focus strategies. Cost leadership is based on a company gaining a price or cost advantage by producing at a lower cost than its competitors. Differentiation strategy aims to differentiate products or services from competitors in a way that gives them unique value in the eyes of the customer. In the focus strategy, the company tries to gain dominance in a narrower market by concentrating on a specific customer group, geographic market, or product area (Porter , 1980).

The fundamental function of competitive strategies is to develop a defensible position for the business against the pressures it faces in the sector. The threat of new competitors entering the market, the bargaining power of customers and suppliers, the existence of substitute products, and the struggle among existing competitors can directly affect the profitability of businesses. Choosing the right strategy contributes to the business establishing a stronger and more sustainable position in the face of these pressures (İnce & Gürbüz, 2020).

Cost leadership strategy is closely related to efficiency, process improvement, economies of scale, and effective use of resources. In differentiation strategy, competitive advantage is built on quality, brand perception, service experience, innovation , and customer-perceived value. Focus strategy, on the other hand, requires developing deeper customer knowledge and a more suitable value proposition in a specific area, rather than targeting the entire broad market (Ali & Anwar , 2021).

Competitive strategies are also related to business performance and innovation capacity. A study on new entrepreneurs found that differentiation strategy was positively correlated with product, employee, customer, and profitability performance; and that cost leadership strategy yielded significant results in terms of profitability performance (İnce & Gürbüz, 2020). A study on hospitals found a positive relationship between supporting innovation activities and cost leadership, differentiation, and focus strategies (Tuna & Yıldız, 2022).

The impact of competitive strategies is also seen in financial and operational areas. Businesses' strategic choices based on cost, differentiation, or focus can affect processes such as resource utilization, cash cycle, inventory management, and working capital management. Examining the relationship between competitive strategies and working capital management effectiveness is important in demonstrating the role of strategic choices on financial management (Habib et al., 2024).

Digital transformation is reshaping how competitive strategies are implemented. Industry 4.0 technologies can support cost leadership through automation, reduction of error rates, and operational efficiency. Big data, artificial intelligence, and customer analytics contribute to differentiation strategies, while flexible production and personalization options enable more effective implementation of focus strategies. A study conducted on manufacturing companies determined that the Industry 4.0 maturity level positively affects overall competitive strategies, cost leadership strategy, differentiation strategy, and focus strategy (Topcuoğlu , 2026).

Competitive strategies gain a more dynamic structure when considered together with internal entrepreneurship tendencies. The ability of businesses to maintain their goals of low cost, different value creation, or concentration in specific markets is linked to the capacity of employees to think innovatively, recognize opportunities, and develop new solutions. A study conducted on marble businesses found no significant relationship between general competitive strategies and internal entrepreneurship, but significant relationships were found between cost leadership and focus strategies and internal entrepreneurship tendencies (Kaya, 2025).

2.3. Internal Entrepreneurship

Internal entrepreneurship is related to employees developing new ideas, recognizing opportunities, taking risks, and producing innovative solutions by acting with an entrepreneurial perspective within the existing organizational

structure. Its fundamental difference from entrepreneurship is that it involves contributing to organizational renewal by utilizing the resources, knowledge, and structural capabilities of the organization they work for, rather than the individual establishing a new business in their own name. Within this framework, internal entrepreneurship is explained through behavioral dimensions such as innovation, proactiveness, risk-taking, autonomy, and individual network development (Efe & Yildiran, 2022).

Changing environmental conditions and increasing competitive pressure necessitate that businesses encourage their employees to think innovatively and transform opportunities into organizational value. Internal entrepreneurship plays a significant role in the development of new products, services, processes, and business models; however, for these behaviors to emerge, top management support, open communication channels, an organizational culture that supports innovation, resource allocation, and employee participation become crucial (Huang et al., 2021).

The relationship between internal entrepreneurship and strategic management is becoming more visible in businesses' efforts to gain a competitive advantage and adapt to change. Risk-taking, proactiveness, and innovation are common behavioral areas of both internal entrepreneurship and strategic management. This partnership contributes to businesses maintaining their current market positions while discovering new opportunities, strengthening organizational learning, and increasing their competitive capacity (Güven, 2020).

Internal entrepreneurship is a multifaceted process that does not automatically produce positive outcomes in every organizational setting. Employees' entrepreneurial abilities can lead to unproductive results if they are not guided in a way that is consistent with reward systems, managerial rules, resource allocation, and corporate values. For entrepreneurial behaviors to create value for the business and society, they must be supported by appropriate incentive mechanisms and aligned with organizational goals (Elert & Stenkula, 2022).

Digital transformation is one of the key developments that increases the importance of internal entrepreneurship for organizations. Employees who have a positive attitude towards digital technologies, are open to learning, and are innovative strengthen the transformation capacity of organizations. The fact that employees' attitudes towards digital technology have an impact on internal entrepreneurship, innovation, and organizational renewal shows that there is a significant relationship between technology use and entrepreneurial behaviors (İrge & Şen, 2020).

Internal entrepreneurship is a structure shaped by psychological, organizational, and environmental factors, not limited to individual characteristics. Psychological capital, person-organization fit, organizational support, and the work environment can influence the level at which employees exhibit internal entrepreneurial behavior. Positive psychological resources such as hope, self-efficacy, optimism, and psychological resilience become factors that support internal entrepreneurial behavior when organizational fit is strengthened (Özkan & Tosun, 2020).

The relationship between intrapreneurship and innovation orientation is a significant area of debate in the literature. While the generation, development, and implementation of innovative ideas are considered key outcomes of intrapreneurship, this relationship is not expected to manifest at the same level in every organization. A study conducted on university employees found no statistically significant overall relationship between intrapreneurship and innovation orientation; partial differences were identified in terms of some demographic variables (Efe & Yildiran, 2022).

Method 3

3.1. Purpose and Significance of the Research

The aim of this research is to examine the impact of Industry 4.0 maturity level on businesses' competitive strategies and internal entrepreneurship tendencies. The digital transformation process is transforming the ways businesses produce, manage, market, make decisions, and develop innovations. Businesses that adopt Industry 4.0 technologies can increase their capacity to gain cost advantages, differentiate their products and services, focus more effectively on specific markets, and support innovative behaviors among their employees.

This research is significant because it assesses the Industry 4.0 maturity level of businesses in terms of their strategic orientations and intra-organizational entrepreneurial behaviors. The fact that it will be conducted specifically on businesses operating in the Turkish Republic of Northern Cyprus will contribute to revealing how digital transformation is reflected in businesses under different economic and sectoral conditions. The study is expected to contribute to the literature on Industry 4.0, competitive strategies, and intra-entrepreneurship; and for practitioners, it is expected to demonstrate the strategic and organizational consequences of digital maturity level.

3.2. Research Hypotheses

H1: There is a significant relationship between the Industry 4.0 maturity level and competitive strategies.

H2: The maturity level of Industry 4.0 significantly and positively influences competitive strategies.

H3: There is a significant relationship between the Industry 4.0 maturity level and internal entrepreneurship tendencies.

H4: The Industry 4.0 maturity level significantly and positively influences domestic entrepreneurship trends.

3.2. Research Methodology

This research was designed using a relational survey model within the framework of a quantitative research approach. The quantitative research approach relies on measuring research variables through numerical data and analyzing the obtained data using statistical techniques. This approach allows for the objective examination of relationships between variables, the evaluation of findings based on measurable data, and the testing of research hypotheses (Büyüköztürk, Kılıç Çakmak, et al., 2021).

A correlational survey model was used in the study. The correlational survey model is one of the research models that aims to determine whether there is covariation between two or more variables, and if so, the direction and level of this covariation. In this model, the researcher does not intervene in the variables; he/she tries to reveal the relationship between the variables based on the current situation (Karasar, 2024).

3.3. Research Population and Sample

The research population consists of managers, specialists, and white-collar employees working in businesses operating in the Turkish Republic of Northern Cyprus (TRNC). Since the research aims to evaluate the Industry 4.0 maturity level, competitive strategies, and internal entrepreneurship tendencies of businesses, the goal was to reach employees who are knowledgeable about business processes. The research employed a non-probability sampling method, specifically convenience sampling. Convenience sampling is a sampling approach that relies on collecting data from participants who are accessible due to time, cost, and access constraints. This method is frequently used in social sciences, particularly to obtain preliminary information in a specific area, facilitate application, and complete field research within a reasonable timeframe (Etikan, Musa, & Alkassim, 2016).

The sample size was determined by considering the scope of the study, the number of variables, and the types of analysis to be applied. For quantitative research in the social sciences, sample sizes greater than 30 and less than 500 are considered sufficient for most studies. In regression analyses, it is also recommended that the sample size be determined according to the number of independent variables (Tabachnick & Fidell, 2013). Since correlation and simple linear regression analyses will be performed in this research, a sample of 200 participants was deemed sufficient for the study.

3.4. Data Collection Tools

In this study, data were obtained through a structured data collection form consisting of a demographic information form and scales designed to measure Industry 4.0 maturity level, competitive strategies, and internal entrepreneurship tendencies. The first section of the form included descriptive questions about the participants and businesses. This section contained a total of seven questions regarding the legal structure of the business, duration of operation, number of employees, participant's age, gender, job title, and length of service.

To determine the maturity level of Industry 4.0, the Industry 4.0 Technologies Usage Level Scale developed by Çalış Duman and Akdemir (2020) was used. The scale consists of seven sub-dimensions and 29 items, including cyber-physical systems, internet of things, cloud computing, big data, robotics applications, 3D printing, and augmented reality. Items were measured using a 5-point Likert scale; participants were asked to rate their level of agreement with the statements on a scale of 1 "strongly disagree" to 5 "strongly agree". In the development study of the scale, the overall Cronbach Alpha reliability coefficient was reported as 0.91. Construct validity was examined with confirmatory factor analysis; after modification in the relevant application, the values CMIN/DF = 2.053, RMR = 0.092, CFI = 0.869, and RMSEA = 0.100 were obtained. These values indicate that the scale has an acceptable level of validity and reliability in measuring the research variable.

To measure competitive strategies, the Competitive Strategies Scale, based on Porter's generic competitive strategies approach, was used. The scale consists of three sub-dimensions: cost leadership, differentiation, and focus strategies. Based on Porter's (1980, 1985) model of competitive strategies, the scale was used by Genç (2016) with 16 statements and a 5-point Likert-type rating scale. In this study, Cronbach's Alpha coefficients were calculated as 0.731 for the cost leadership strategy, 0.820 for the differentiation strategy, and 0.719 for the focus strategy. In a different application of the scale, the overall Cronbach's Alpha value was found to be 0.813; the confirmatory factor analysis results reported RMSEA = 0.0783, TLI = 0.807, $\chi^2/df = 2.85$, and $p = 0.001$. In another application of the 32-item scale based on the Porter model, it was stated that the Cronbach's Alpha values for the sub-dimensions of the scale ranged from 0.87 to 0.93 (Acar, 2020). These findings reveal that the competition strategies scale has a sufficient level of reliability to be used within the scope of research.

To measure internal entrepreneurship tendencies, the Internal Entrepreneurship Scale developed by Naktiyok and Kök (2006) was used. The scale was created by utilizing the Corporate Entrepreneurship Scale developed by Entrescale and Zahra. The internal entrepreneurship scale includes the dimensions of innovation, new venture orientation, organizational renewal, and proactiveness. Consisting of a total of 18 items, the scale has a 5-point Likert-type rating structure, and all items are positively scored. In the study conducted by Naktiyok and Kök (2006), the overall Cronbach's Alpha coefficient of the scale was calculated as 0.87. Reliability values for the sub-dimensions were reported as 0.84 for innovation, 0.71 for new venture orientation, 0.71 for organizational renewal, and 0.72 for proactiveness.

, it was determined that the factor loadings ranged from 0.369 to 0.810, and the total explained variance was 42%. Confirmatory factor analysis yielded RMSEA = 0.0665, TLI = 0.862, $X^2/df = 2.18$, and $p = 0.001$. In the same application, the overall Cronbach's Alpha coefficient of the scale was calculated as 0.844. These values indicate that the internal entrepreneurship scale can be used as a valid and reliable measurement tool within the scope of this research.

3.5. Data Analysis

The data obtained within the scope of the research were analyzed using the IBM SPSS software package. Before proceeding with the analysis process, the dataset was checked, missing and erroneous entries were examined, and the data were prepared for statistical analysis. In the first stage, frequency, percentage, mean, and standard deviation values were used to reveal the demographic characteristics of the participants and information about the businesses. Cronbach's Alpha reliability analysis was applied to determine the internal consistency levels of the scales used. Correlation analysis was conducted to determine the relationships between the main variables of the research, namely the Industry 4.0 maturity level, competitive strategies, and internal entrepreneurship tendencies. Simple linear regression analysis was used to examine the effect of the Industry 4.0 maturity level on competitive strategies and internal entrepreneurship tendencies. The significance level was accepted as $p < 0.05$ in the analyses.

4. Findings

4.1. Descriptive Findings Regarding Participants and Businesses

Descriptive findings regarding the key characteristics of the employees and businesses participating in the study are presented in Table 1.

Table 1. Descriptive Findings Regarding Participants and Businesses

Variable	Category	n	%
Gender	Woman	88	44.0
	Male	112	56.0
Age	18-25	34	17.0
	26-35	76	38.0
	36-45	58	29.0
	46 and over	32	16.0
Duty	Executive	42	21.0
	Expert	68	34.0
	White-collar worker	78	39.0
	Other	12	6.0
Term of office	Less than 1 year	22	11.0
	1-5 years	86	43.0
	6-10 years	54	27.0
	11 years and older	38	19.0
Legal structure of the business	Sole proprietorship	28	14.0
	Limited company	102	51.0
	Incorporated company	56	28.0
	Other	14	7.0
Business operating period	1-5 years	38	19.0
	6-10 years	64	32.0
	11-15 years	52	26.0
	16 years and older	46	23.0
Total		200	100.0

Table 1 shows that 56% of the participants were male and 44% were female. The highest age distribution among participants was 26-35 years old, at 38%. Regarding job roles, 39% were white-collar workers, 34% were specialists, and 21% were managers. The highest percentage of employees, at 43%, had worked for 1-5 years. When evaluating the findings regarding businesses, it was observed that 51% of the businesses included in the study were limited liability companies and 28% were joint-stock companies. In terms of operating duration, the highest percentage, at 32%, belonged to businesses that had been operating for 6-10 years.

4.2. Reliability Analysis

Cronbach's Alpha reliability analysis was conducted to determine the internal consistency levels of the scales used in the research. The Cronbach's Alpha values for the Industry 4.0 Maturity Level Scale, the Competitive Strategies Scale, and the Internal Entrepreneurship Scale are presented in Table 2.

Table 2. Results of Reliability Analysis for the Scales

Scale	Number of Items	Cronbach Alfa
Industry 4.0 Maturity Level Scale	29	0.928
Competitive Strategies Scale	16	0.861
Internal Entrepreneurship Scale	18	0.884

As shown in Table 2, the Industry 4.0 Maturity Level Scale The Cronbach's Alpha value was calculated as 0.928. This refers to the Competitive Strategies Scale. The Cronbach's Alpha value is 0.861 for the Internal Entrepreneurship Scale. The Cronbach's Alpha value is 0.884. A Cronbach's Alpha coefficient of 0.70 or higher indicates that the scales have an acceptable level of internal consistency. Therefore, it can be said that all three scales used in the study are reliable.

4.3. Normality Analysis and Descriptive Statistics

Skewness and kurtosis values were examined to determine whether the data from the scales used in the study exhibited a normal distribution. Skewness and kurtosis values between -1.5 and +1.5 are considered to indicate that the data meet the assumption of normal distribution (Tabachnick & Fidell, 2013). The results of the normality analysis for the scales are presented in Table 3.

Table 3. Descriptive Statistics and Normality Analysis Results for the Variables

Scale	Avg.	Std . Deviation	Skewness Statistics	Skewness Std . Error	Kurtosis Statistics	Flatness Std . Error
Industry 4.0 Maturity Level	3.79	0.72	-0.412	0.172	0.286	0.342
Competitive Strategies	3.86	0.66	-0.318	0.172	0.194	0.342
Internal Entrepreneurship Trends	3.74	0.69	-0.275	0.172	-0.103	0.342

the skewness of the Industry 4.0 Maturity Level Scale is -0.412 and the kurtosis is 0.286. The Competitive Strategies Scale has a skewness of -0.318 and a kurtosis of 0.194. The Internal Entrepreneurship Tendencies Scale has a skewness of -0.275 and a kurtosis of -0.103. All values fall within the range of -1.5 to +1.5, indicating that the data meet the assumption of a normal distribution. Therefore, it was deemed appropriate to utilize parametric analyses in this research.

To evaluate the suitability of the scales for factor analysis, the Kaiser-Meyer-Olkin (KMO) sample adequacy test and the Bartlett sphericity test were examined. A KMO value above 0.60 indicates that the sample size is sufficient for factor analysis; a significant Bartlett test indicates that there is a relationship between the variables at a level suitable for factor analysis (Büyükoztürk, 2021). The results of the KMO and Bartlett tests are given in Table 4.

Table 4. KMO and Bartlett Test Results

Scale	KMO	Bartlett Test Chi-Square Statistic	sd	p
Industry 4.0 Maturity Level	0.914	3246,217	406	0.000
Competitive Strategies	0.842	1284,563	120	0.000
Internal Entrepreneurship Trends	0.873	1586,442	153	0.000

According to Table 4, the KMO value of the Industry 4.0 Maturity Level Scale was calculated as 0.914, the KMO value of the Competitive Strategies Scale as 0.842, and the KMO value of the Internal Entrepreneurship Tendencies Scale as 0.873. These values indicate that the sample size is sufficient for factor analysis. The fact that the Bartlett sphericity test results were found to be significant in all scales ($p < 0.001$) reveals that there is a sufficient level of relationship between the scale items to allow for factor analysis. When the normality analysis, KMO, and Bartlett test results are evaluated together, it can be said that the data set used in the research is suitable for statistical analyses. Accordingly, correlation analysis was performed to examine the relationships between the variables, and regression analysis was performed to determine the effect of Industry 4.0 maturity level on competitive strategies and internal entrepreneurship tendencies.

4.4. Correlation Analysis

Pearson correlation analysis was conducted to determine the relationships between Industry 4.0 maturity level, competitive strategies, and internal entrepreneurship tendencies. Since the skewness and kurtosis values for the variables were within acceptable limits in the normality analysis, parametric tests were utilized. The results of the correlation analysis are presented in Table 5.

Table 5. Correlation Analysis Results Between Variables

Variables	1	2	3
1. Industry 4.0 Maturity Level	1		
2. Competitive Strategies	0.548**	1	
3. Internal Entrepreneurship Trends	0.471**	0.436**	1

Note: ** $p < 0.01$.

Table 5 shows a positive and moderately significant correlation between Industry 4.0 maturity level and competitive strategies ($r=0.548$; $p < 0.01$). This finding indicates that as businesses' Industry 4.0 maturity level increases, their use of competitive strategies tends to increase as well. A positive and significant correlation was also found between Industry 4.0 maturity level and internal entrepreneurship tendencies ($r=0.471$; $p < 0.01$). This result suggests that employees in businesses that utilize digital technologies at a higher maturity level may have stronger tendencies towards innovative thinking, seizing opportunities, and exhibiting proactive behavior.

A positive and significant relationship was found between competitive strategies and internal entrepreneurship tendencies ($r=0.436$; $p < 0.01$). This finding reveals a tendency for increased entrepreneurial behavior among employees as businesses adopt competitive strategies more effectively. According to the correlation analysis findings, hypotheses H1 and H3 are supported. The positive correlation between Industry 4.0 maturity level and competitive strategies and internal entrepreneurship tendencies provides preliminary findings supporting the basic assumptions of the research.

4.6. Regression Analysis

In this study, a simple linear regression analysis was conducted to determine the effect of Industry 4.0 maturity level on competitive strategies and internal entrepreneurship tendencies. In the analyses, Industry 4.0 maturity level was treated as the independent variable; competitive strategies and internal entrepreneurship tendencies were evaluated as dependent variables in separate models.

Table 6. Regression Analysis of the Impact of Industry 4.0 Maturity Level on Competitive Strategies.

Dependent variable	Independent variable	B	Std. Error	Beta	t	p
Competitive Strategies	Still	1,942	0.214		9,075	0.000
	Industry 4.0 Maturity Level	0.506	0.053	0.548	9,251	0.000
R	R²	Corrected R²		F		p
0.548	0.300	0.297		85,581		0.000

According to the findings in Table 6, the Industry 4.0 maturity level has a positive and significant effect on competitive strategies ($\beta=0.548$; $p < 0.001$). When the explanatory power of the model is examined, it is seen that the Industry 4.0 maturity level explains 30% of the total variance in competitive strategies ($R^2=0.300$). The model was determined to be generally significant ($F=85.581$; $p < 0.001$). This indicates that as the Industry 4.0 maturity level of businesses increases, their adoption and implementation of competitive strategies also increase. Therefore, hypothesis H2 is supported.

Table 7. Regression Analysis of the Effect of Industry 4.0 Maturity Level on Internal Entrepreneurship Trends.

Dependent variable	Independent variable	B	Std. Error	Beta	t	p
Internal Entrepreneurship Trends	Still	2,031	0.231		8,792	0.000
	Industry 4.0 Maturity Level	0.451	0.057	0.471	7,533	0.000
R	R²	Corrected R²		F		p
0.471	0.222	0.218		56,746		0.000

According to Table 7, the Industry 4.0 maturity level has a positive and significant effect on internal entrepreneurship tendencies ($\beta=0.471$; $p < 0.001$). When the explanatory power of the model is examined, it is determined that the Industry 4.0 maturity level explains 22.2% of the total variance in internal entrepreneurship tendencies ($R^2=0.222$). The significance level of the model is also statistically sufficient ($F=56.746$; $p < 0.001$). This

indicates that employees in businesses that use digital technologies at a higher maturity level have stronger tendencies towards innovative thinking, seizing opportunities, and exhibiting proactive behavior. Therefore, hypothesis H4 is supported.

5. Conclusion And Discussion

This study examines the impact of Industry 4.0 maturity level on competitive strategies and internal entrepreneurship tendencies. Data obtained from businesses operating in the Turkish Republic of Northern Cyprus (TRNC) showed that digital maturity is a significant variable in terms of businesses' strategic orientations and employees' internal entrepreneurial behaviors. Analyses conducted within the scope of the research revealed a positive and significant relationship between Industry 4.0 maturity level and competitive strategies; it was determined that Industry 4.0 maturity level significantly affects competitive strategies. Similarly, a positive and significant relationship was found between Industry 4.0 maturity level and internal entrepreneurship tendencies, indicating that digital maturity is a variable that supports internal entrepreneurship tendencies.

The first finding of the research shows that as the Industry 4.0 maturity level increases, businesses adopt their competitive strategies more strongly. The integration of digital technologies into production, management, and decision-making processes offers significant advantages to businesses in terms of reducing costs, speeding up processes, increasing quality, and responding more flexibly to customer demands. Technologies such as cyber-physical systems, the Internet of Things, big data, cloud computing, autonomous robots, and augmented reality are making the production structure of businesses more connected, autonomous, and data-driven (Annaç). Within the historical development of industrial revolutions , Industry 4.0's transformation of production and management approaches is also reshaping the ways in which businesses compete (Yasım, 2020; Yıldırım, 2020) .

The impact of Industry 4.0 maturity level on competitive strategies becomes clearer when considered alongside Porter's generic competitive strategies. Automation, data-driven decision-making, and efficient resource utilization support the cost leadership strategy; big data, artificial intelligence, and customer analytics contribute to the differentiation strategy. Flexible production and personalization options enable the more effective implementation of the focus strategy. Porter's cost leadership, differentiation, and focus strategies remain valid in today's conditions; digital transformation strengthens the way these strategies are implemented (Porter , 1980; Ali & Anwar , 2021).

Topcuoğlu (2026) determined that the Industry 4.0 maturity level positively affects general competitive strategies, cost leadership, differentiation, and focus strategies. Similarly, the study by Ekinçi Furtana and Acar (2024) found that Industry 4.0 applications have an impact on competitive strategies, market performance, and innovation performance. Research conducted on SMEs also shows that businesses have different maturity levels in the digital transformation process and that technological awareness is important for strategic decisions (Akpınar, Dengiz, & Dengiz, 2024).

The literature also emphasizes that competitive strategies are related to outcomes such as business performance, innovation , and financial efficiency. In a study by İnce and Gürbüz (2020), it was determined that the differentiation strategy was related to product, employee, customer, and profitability performance; and that the cost leadership strategy yielded significant results in terms of profitability performance. The positive relationship between innovation activities and cost leadership, differentiation, and focus strategies indicates that competitive strategies should be considered in conjunction with innovation capacity (Tuna & Yıldız, 2022). Furthermore, the correlation of competitive strategies with working capital management efficiency reveals that strategic choices can also have an impact on financial processes (Habib, Yang , & Cui , 2024).

The second key finding of the study is that the Industry 4.0 maturity level has a positive and significant effect on internal entrepreneurship tendencies. The integration of digital technologies into business processes can support employees' tendencies to develop new ideas, recognize opportunities, produce innovative solutions, and act proactively . Internal entrepreneurship is explained by behavioral dimensions such as innovation, proactiveness , risk-taking, autonomy, and individual network development (Efe & Yıldırım, 2022).

The study by İrge and Şen (2020) determined that attitudes towards digital technology have an impact on internal entrepreneurship, innovation, and organizational renewal. This finding suggests that digital transformation can create a foundation that supports employees' entrepreneurial behaviors. For internal entrepreneurship to develop, top management support, open communication, resource allocation, an organizational culture that supports innovation, and employee participation are important (Huang , Yang Lin, & Hsieh , 2021).

The relationship between internal entrepreneurship and strategic management also supports the research findings. Risk-taking, innovation, and proactiveness are common behavioral areas of both strategic management and internal entrepreneurship. A study by Guven (2020) indicates that the strategic internal entrepreneurship approach contributes to businesses discovering new opportunities and strengthening their competitive advantage . Elert and Stenkula (2022) emphasize that for internal entrepreneurship to yield productive results, employee behaviors must be aligned with organizational goals and appropriate incentive mechanisms.

Internal entrepreneurship appears to be shaped by both individual and organizational conditions. A study by Özkan and Tosun (2020) determined that psychological capital and person-organization fit have an impact on internal

entrepreneurship. Employees transforming their innovative ideas into organizational value supports businesses in adapting to changing market conditions and increasing their competitiveness (Morais, Santos, Tolentino, & Martins, 2021). The increasing strategic value of internal entrepreneurship in modern organizations demonstrates the importance of employees' capacity to generate innovation in terms of competitive advantage (Vengrouskie, 2025). The transformation of entrepreneurial ecosystems and the support of new business models by digital technologies further reinforce this finding (Kumar, Kaur, Erceg, & Mirović, 2023). Asfour's (2023) study, which showed that entrepreneurship and innovation orientation have significant effects on competitive strategies, indicates that the variables considered in this research should be evaluated within a complementary framework. Overall, the research findings indicate that the explanatory effect of Industry 4.0 maturity level on competitive strategies is stronger than that of intrapreneurship tendencies. Digital maturity is more directly reflected in competitive strategies through production processes, cost structure, decision-making mechanisms, customer data, and operational flexibility. Intrapreneurship tendencies, on the other hand, are shaped by various factors besides technological infrastructure, such as organizational culture, management support, psychological capital, employee participation, and reward systems.

The main contribution of this study is that it addresses the Industry 4.0 maturity level together with competitive strategies and internal entrepreneurship tendencies. While there are studies in the literature that examine the relationship between Industry 4.0 and competitive strategies, market performance, innovation performance, and entrepreneurial ecosystems, research that evaluates these variables within the same model is limited. This research contributes to the literature by demonstrating the impact of digital transformation on businesses' strategic orientations and internal entrepreneurial behaviors. In terms of application, it is recommended that businesses operating in the TRNC plan their digital transformation investments in line with their competitive strategies, create an organizational culture that supports employees' innovative ideas, and link internal entrepreneurial behaviors to strategic goals.

The study has some limitations. The fact that the study was conducted with 200 participants working in businesses operating in the Turkish Republic of Northern Cyprus necessitates caution in generalizing the findings to different countries, sectors, and samples. Due to the cross-sectional research design, the variables were evaluated within a specific time period. The reliance on participant perceptions also creates limitations stemming from self-report. Future research could compare different sectors, use larger samples, and delve deeper into managers' experiences with digital transformation, competitive strategies, and internal entrepreneurship using qualitative methods. Including mediating or moderating variables such as organizational culture, innovation capacity, management support, digital competence, and psychological capital in the model would contribute to the literature.

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THE ROLE OF VALUES IN THE DEVELOPMENT OF QUALITY CULTURE

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ABSTRACT

This article aims to identify the role of values in the establishment and sustainable development of a quality culture within higher education institutions. Utilizing a literature review methodology, the study provides a comparative analysis of the theoretical frameworks proposed by scholars such as Ehlers, Woods, Yorke, Gümüş, and Koyuncuoğlu, while assessing the current state of quality culture within the national context through an examination of accreditation reports from Azerbaijani universities. The analysis indicates that a quality culture is reinforced not merely through compliance with procedural and normative requirements, but also through internalized shared values, interpersonal relationships, collaboration, and process-oriented management within the organization. The study emphasizes that values such as collaboration, transparency, integrity, inclusiveness, trust, and commitment are fundamental components ensuring the sustainability of quality-oriented organizational activities; in the absence of the systematic application of these values, efforts toward developing a quality culture lack stability. The research concludes that a value-oriented management model serves as a fundamental framework for the strategic advancement of quality culture in higher education institutions; without such a model, qualitative improvements remain ephemeral and unsustainable.

Keywords: *Quality culture, higher education, organizational values, accreditation, values and quality culture.*

Introduction

In the contemporary era, the educational system is no longer confined to the mere transmission of knowledge and skills; rather, it has evolved into a multifaceted structure that facilitates the social, spiritual, and cultural development of learners. Within a period of rapidly shifting global challenges—encompassing technological transformation, cultural diversity, social justice imperatives, and sustainable development goals—the value-based guiding role of education has become increasingly pertinent. In this context, the quality of education, regarding both its content and methodology, assumes critical importance. Educational quality is fundamentally delivered through educational institutions, where the quality assurance system is defined by core values and organizational identity. Accordingly, investigating the development of a quality culture in educational institutions as a means of ensuring the preparation of both professionals and citizens, as well as its direct contribution to national progress, remains a highly topical issue.

Jean Monnet, one of the founders of the European Union, famously remarked: “If I were to begin again, I would start with culture, not the economy” (Koyuncuoğlu, 2020). While the significance of economic power in developed nations is undeniable, the prioritization of culture highlights the reality that cultural considerations frequently remain marginalized in many national contexts. Raymond Williams, writing on the nature of culture, stated: “Culture is ordinary: every human society has its own shape, its own purposes, its own meanings... and its own way of life” (Harvey and Stensaker, 2007). This perspective elucidates the direct correlation between culture and education, as the objectives of any human society can be viewed as the direct outcome of the education provided within that society.

Consequently, as Koyuncuoğlu (2020) asserts, quality management in higher education institutions must commence with culture. It follows that culture must be at the forefront of any structure being established or requiring reconfiguration over time. Vardar (2020) notes that, globally, state institutions expect higher education establishments to contribute to national prosperity, treating them as domains of strategic investment. As a result, specific regulatory frameworks are implemented to monitor the return on these investments. In this regard, continuous reforms in the educational sector, aligned with the demands of a changing world, should focus on both the optimization of education and the enhancement of national welfare. Therefore, every educational institution must first conceptualize what the term “quality” signifies within its specific context. While numerous definitions of quality exist, the ISO 9000 standard defines quality as the “degree to which a set of inherent

characteristics of an object fulfils requirements” (www.iso.org). In this framework, a "requirement" implies a specific expectation or a necessity. Fundamentally, educational quality is the extent to which educational institutions can successfully satisfy the needs and expectations inherent in society.

Objective

The primary aim of this research is to identify the role of values in the establishment and sustainable development of a quality culture within higher education institutions. The study seeks to substantiate that quality culture is reinforced not merely through procedural and normative requirements but through shared values, interpersonal relationships, and behavioral patterns internalized within the organization. Furthermore, the research aims to assess the progress of quality culture within the national context, based on a comparative analysis of accreditation reports conducted at Azerbaijani universities during the 2023–2024 academic period. Within this framework, the study evaluates value-based quality assurance mechanisms against the background of international best practices to determine the strategic orientations necessary for their implementation in the local higher education system.

A key focus involves elucidating how existing and emerging values within higher education institutions influence the consolidation of a quality culture. Ehlers (2008) observes that higher education institutions are transitioning into a new era of quality management, characterized by a developmental approach centered on values, competencies, and professionalism. This transition underscores the critical priority of fostering a quality culture in education. By examining which specific values fulfill significant roles in this development, the study provides a comprehensive overview of their impact on educational quality culture. Additionally, the research aims to offer recommendations for future scholarly inquiries in this field. Ultimately, the study addresses the following fundamental question: *“Which values play a pivotal role in the development of a quality culture in education?”*

Significance

The significance of this research lies in its status as a systematic investigation that examines the formation of quality culture in higher education institutions through the prism of values. Woods (1996) emphasizes that in the contemporary world, quality assurance mechanisms are not merely composed of technical procedures; rather, they are underpinned by organizational values, collaborative relationships, transparency, and process-oriented management. This article aims to provide a scientific exploration of the specific role these values play in shaping a quality culture within higher education.

Furthermore, by basing the study on an analysis of accreditation reports from Azerbaijani universities for the 2023–2024 academic year, the research enhances its relevance to the national context and underscores the necessity for a renewed approach to quality culture within the higher education system. Consequently, the study holds both theoretical and practical importance for educational policy-making bodies and university leadership alike. By providing a scientific framework for the establishment of a value-based quality management model, the research supports the implementation of quality-oriented strategic management within universities. This is of profound importance for the institutional development of higher education establishments, the refinement of management culture, and alignment with international standards.

Theoretical Framework

The academic literature reflects a multitude of perspectives regarding quality culture in higher education, with researchers emphasizing various dimensions to underscore its significance. For instance, Koyuncuoğlu (2020) asserts that the teaching staff—specifically faculty and academic personnel—constitute the primary source of educational quality. He maintains that cultivating high-quality students is inherently difficult without a high-quality faculty. In this regard, the primary duty of educators is to provide effective instruction. However, institutional constraints within management structures, human resource systems, educational and research mechanisms, as well as finance and infrastructure, are steadily increasing. Consequently, faculty members struggle under the burden of mass education, facing difficulties in fulfilling the tripartite functions of higher education: teaching, research, and public service. Excessive teaching loads and high student-to-teacher ratios impede student access to faculty and create communication barriers. Furthermore, the inadequate preparation of instructional materials can be perceived as an indicator of the level of importance faculty members assign to teaching. Collectively, these factors contribute to a decline in educational quality (Koyuncuoğlu, 2020). Such challenges further exacerbate the necessity of establishing a quality culture within higher education institutions. Quality culture is not limited to the mere implementation of standards or adherence to procedures; rather, it is a comprehensive concept that necessitates the unification of faculty, students, and management around shared values, expectations, and a collective sense of responsibility regarding quality. If the teaching staff faces limitations in terms of environment and motivation to deliver high-quality instruction, the institutional consolidation of a quality culture becomes arduous. Ehlers (2008) stipulates that the quality of teaching and learning processes is significantly influenced by cultural factors. These factors include attitudes, faculty

competencies, student skills and motivation, the organizational environment and values, as well as existing structures such as rules, regulations, and legislation. Accordingly, to create a high-quality educational environment, higher education institutions must prioritize the strengthening of cultural factors (Ehlers, 2008). This necessitates the promotion of professional development for faculty, the creation of an environment that fosters student motivation, and the assurance of transparency and participation in administrative processes. The refinement of management culture, in turn, facilitates the optimization of the instructional process, the overall enhancement of quality, and the attainment of the strategic objectives of higher education.

Gümüş (2022), a prominent researcher in this field, posits that the quality culture existing within an organization is a sub-dimension of organizational culture. It refers to the organization's beliefs and values concerning quality, the quality level of the products and services it provides, its quality philosophy, practices, goals, norms, habits, and its general approach to the conceptualization of quality (Gümüş, 2022). Similarly, the European University Association (EUA) defines quality culture as "a type of organizational culture that aims to continuously improve quality." According to the Association, quality culture characterizes an organizational environment aiming for continuous improvement through two primary elements:

1. A cultural and psychological aspect, encompassing shared values, beliefs, and expectations among organizational members, as well as a commitment to quality.
2. A structural and managerial aspect, based on defined processes and management systems (EUA, 2006).

Quality culture is a type of culture formed through the mutual complementation and continuous development of two main directions. Gümüş also notes that the core components of quality culture consist of organizations that strive at every step on the path to "being quality-oriented" by learning quality-related values, sharing these values, internalizing them among employees, drawing lessons from their mistakes, and continuously implementing all these processes (Gümüş, 2022).

Quality culture refers to an organizational culture oriented towards quality across all processes, activities, and behaviors, beginning with strategic planning within an institution. Organizations possessing a quality culture are strong entities that uphold values and belief systems promoting overall quality-oriented behavior (Mahmood & Mohammed, 2008). This definition indicates that quality culture is not merely about adherence to procedures and standards; rather, it represents a profound cultural approach concerning the overall thinking and behavior of the organization. Institutions with such a culture ensure that quality serves as the primary criterion in decision-making at every stage and encourage all employees to act in accordance with the same value system. Consequently, quality transforms from a random outcome into a systematically created and sustained value.

Quality culture is a dynamic and transparent form of culture that integrates a healthy competitive environment within the organization, the proper execution of tasks, continuous improvement, and a mindset in which failures and errors are openly discussed. In this culture, employees do not merely comply with quality instructions but also engage in quality-oriented activities, with everyone discussing quality matters (Gümüş, 2019). This explanation emphasizes that quality culture is built upon transparency, learning, and continuous improvement in organizational behavior. Within such a culture, the open analysis of errors—rather than their concealment—becomes the norm, thereby expanding learning opportunities. The internalization of quality by employees not only at the level of execution but also at the levels of thinking and attitude constitutes one of the fundamental factors ensuring the long-term success of the organization.

When examining the principles of quality culture, the principle of conveying the values derived from the mission and strategy of higher education institutions to all levels of the structure and possessing shared values (as stated in the KT book) once again demonstrates that values must be considered in the improvement and development of quality culture. In addition, as Koyuncuoğlu notes, "quality culture represents both visible and invisible cultural elements" (Koyuncuoğlu, 2020). This implies that institutions must understand the cultural elements comprising quality culture and strive to implement them in order to create and develop their quality cultures. From this perspective, the empirical research conducted by Ehlers in this field holds considerable significance. The quality culture model in education developed by Ehlers, along with its various components, constitutes a model that can directly exert a positive influence on the development of quality culture in organizations. The model takes into account existing research and approaches and creates conditions for their more measurable development in the domains of quality and education. It is a conceptual and structural model that defines the structure of the concept of quality culture, as well as its various components, and illustrates their interrelationships. The model consists of four main components:

1. **Structural factors** – elements representing the quality systems of universities.
2. **Activating factors** – elements supporting quality competencies that enable organizations to integrate their quality systems into their cultures.
3. **Quality culture factors** – elements representing the organization's specific products, symbols, and rituals.
4. **Integrating factors** – connecting elements that link these components through participation, trust, and communication (Ehlers, 2008).

The cultural elements influenced by quality development processes are situated in the outer layer of the model and reflect the organizational culture approaches proposed by Schein (1992) and Morgan (2002). Quality development processes can influence existing assumptions regarding values, rituals, and tangible cultural artifacts. For instance, symbolically “heroic” figures highlighted through reward mechanisms represent successful quality development processes in higher education institutions and serve as a mechanism that promotes the advancement of quality within the organization. Koyuncuoğlu also states that when seeking an answer to the question “*What is good education?*”, teaching and educational values must be taken into account (Koyuncuoğlu, 2020). In this regard, every higher education institution possesses its own unique symbols, values, and thought models, which form an integral part of organizational culture.

Throughout history, there has been a sustained interest in understanding the essence of human values and their role in explaining and promoting behavior. Posner and Munson note that philosophers such as Aristotle and Kant referred to values when discussing aesthetic issues, while Plato, Hobbes, and Rousseau did so when contemplating problems of state governance and civic responsibility. Similarly, military, industrial, and political leaders such as Eisenhower, Sloan, Rockefeller, and Morgan paid attention to the concept of values when considering strategies for motivating and leading their subordinates (Posner and Munson, 1979). These facts demonstrate that values have not been merely the subject of philosophical discussion but have also been accepted as a primary mechanism in the governance of various social systems across different eras. Both thinkers and practical leaders throughout history have recognized the powerful role of values in shaping human behavior, directing decision-making, and guiding action. This indicates that values constitute the foundational principle of human activity and play a decisive role in interpersonal relations, regardless of time or culture.

Although there is no single definition of values, various approaches exist. Woods states that values are our fundamental beliefs about what we consider right, good, true, correct, desirable, and moral (Woods, 1996). In this context, our stance and way of thinking toward various situations are directly related to the values we possess. Values are as important for individuals as they are decisive for organizations. Munson emphasizes that values underpin organizational decisions, behavioral differences between managers and non-managers, and the foundations of management success (Telford, 2002). This approach reaffirms that the formation of a common value framework is essential for ensuring that decisions made within the organization are consistent, objective, and goal-oriented. In an environment where values are aligned, both leadership and employees can focus on the same objectives, thereby enhancing the effectiveness of management processes.

McMurray has demonstrated that many of the “human problems” arising within organizations stem from value incongruence (McMurray, 1963). This finding reveals that the root of organizational conflicts, confrontations, and misunderstandings among employees lies not in formal rules but in value systems. Thus, in the absence of shared values in the work environment, the workplace becomes tense, trust among employees decreases, and the organization’s overall operational capacity weakens. Clare and Stanford, for their part, emphasize that values distinguish organizations from one another (Clare and Stanford, 1979). This perspective shows that the primary element defining an organization’s identity and operational style is precisely its value system. Even organizations operating in the same field exhibit differences in management philosophy, decision-making processes, and employee relations when they possess distinct values. This differentiating role of values serves as a significant factor influencing the organization’s image and long-term objectives.

Literature Review

When examining quality culture in education and organizational values from a general perspective, it becomes evident that values represent a significant factor in the development of organizations and in achieving their defined objectives. Nevertheless, empirical and theoretical studies dedicated to the interrelationship between quality culture and values remain relatively scarce in the academic literature. Woods argues that if organizations aim for the effective functioning of the entire system, they should not focus solely on optimizing one part and expect this to automatically exert a positive influence on the whole system. Instead, they must always consider how any single action will affect all other components (Woods, 1996). Therefore, the development of quality culture requires that all its components — particularly values — be taken into account. In this regard, the values directly involved in quality culture must first be identified.

The studies by Woods (1996), Ehlers (2008), Ehlers (2016), Cardoso, S., Rosa, M. J., and Stensaker, B. (2016), and Stephens and Roszak (2021) are of considerable importance concerning the interplay between quality culture and values. Woods identifies six core values that can serve as a foundation for building a successful quality culture: (1) *we are all in this together: company, suppliers, customers*; (2) *there is no concept of “above” or “below”*; (3) *open and honest communication is essential*; (4) *everyone has access to all the information they need*; (5) *focus on processes rather than individuals*; and (6) *there is no success or failure — only learning experiences*.

In explaining the meaning of these values, Woods considers the first value — “we are all in this together: company, suppliers, customers” — as the most natural starting point for quality culture within organizations. He notes that this value is realized when individuals perceive themselves as part of “something greater than

themselves” and subsequently align their personal achievements with these broader goals. In this context, teamwork and loyalty come to the forefront. The second value — the absence of “above” or “below” hierarchies — fosters a culture of equal opportunities, encouraging collaborative work for the benefit of all and creating a quality culture based on equality. The third value highlighted by Woods emphasizes transparency and honesty in communication, particularly highlighting the importance of integrity and empathy. Another researcher, Peter Senge, observes that individuals sometimes use communication as a tool for personal manipulation. He asserts that this behavior constitutes one of the main factors negatively affecting quality culture in organizations (Senge, 1990). Therefore, one of the most effective ways to promote truth-telling is to cultivate a culture in which people genuinely listen to and seek to understand one another. Only in this way can problems be properly analyzed and goal-oriented solutions achieved.

Woods’ fourth value concerns ensuring that everyone has access to all the information they require. In institutions where this value is established, new organizational structures emerge that are centered around teams, processes, and projects. Moreover, modern technology provides direct access to necessary information and individuals, thereby enabling more efficient task performance. The fifth value focuses on processes rather than individuals. The advantages of process orientation include: (1) enhancing the importance of teamwork and collaboration while highlighting the interdependence of tasks; (2) prioritizing tools that make the management and improvement of processes more efficient and effective; (3) emphasizing the use of quality tools to measure process performance and team effectiveness, along with continuous improvement; and (4) shifting people away from a “blame the individual” mindset toward a “blame the process and improve it” approach.

The sixth and final value articulated by Woods is expressed as “there is no success or failure — only learning experiences.” Success and failure are always retrospective evaluations. We may be satisfied or dissatisfied with an outcome, yet in both cases, the situation is temporary — merely another experience in our lives from which we can learn and record.

Stephens and Roszak contend that linking quality culture with a systematic approach is based on six fundamental values for establishing an effective quality culture. These include: strengthening corporate identity, fostering collaborative relationships within the organization’s internal network, open communication based on trustworthy information, unrestricted access to information regarding organizational processes, and a focus on processes and learning regardless of success or failure (Stephens & Roszak, 2021). Upon reviewing this approach, it is apparent that both Woods (1996) and Stephens and Roszak (2021) rely on the same foundational values. This further confirms the critical role of these values — particularly those identified by the aforementioned authors — in the development of quality culture within organizations.

Additionally, a study conducted in Portugal revealed that academic staff identified both cultural-psychological deficiencies (such as excessive workload, training gaps, lack of trust, and communication shortages) and structural-managerial deficiencies (including leadership behavior, decision-making processes, financial conditions, and infrastructure) as key barriers to quality (Cardoso et al., 2016). This research clearly demonstrates that the absence of values such as trust and effective communication directly impacts both quality outcomes and the development of quality culture in higher education institutions.

Methodology

This article was written using the literature review method. The purpose of the study is to explain the role of values as a fundamental component of quality culture in education and to identify the mechanisms through which they influence the formation of quality culture. To achieve this objective, both theoretical and applied sources were systematically analyzed. During the literature selection process, scientific articles, books, and conceptual studies primarily addressing the topics of “quality culture,” “values,” “organizational values,” “organizational culture,” and “quality culture and values” were examined. The analysis of the sources was conducted based on a thematic approach, with the positions of various authors regarding the essence of values, their functions within organizations, and their relationship with quality culture evaluated comparatively. In carrying out the analysis, approaches explaining the impact of values on behavior, decision-making processes, and the quality of management within organizations were investigated.

Thus, this methodological approach enables a multifaceted understanding of the fundamental role that values play in the development of quality culture and forms the theoretical foundation of the study.

Findings and Discussion

The results of the study lead to the conclusion that quality culture is not a spontaneously formed organizational and managerial characteristic, but rather a structured system based on values. A comparison of various authors’ approaches reveals that quality behaviors cannot be sustained without values, and organizations are unable to achieve long-term development in their absence. The findings demonstrate that values constitute a fundamental component that plays a central role in the formation and development of quality culture. The continuity and effectiveness of quality-oriented activities in organizations, particularly in higher education institutions, are closely linked to the extent to which values are internalized within these institutions.

The analysis indicates that values do not merely serve as a normative framework regulating organizational behavior; they also act as a strategic factor that defines the structure, functional mechanisms, and developmental dynamics of quality culture. In this regard, the manifestation of values in the organization's daily practices, decision-making processes, management mechanisms, and human relations directly influences the strengthening of quality culture. The study shows that any system cannot change instantaneously; change becomes sustainable and effective only when it occurs in a gradual, sequential, and balanced manner. This finding further reinforces the specific role of values in the transformation process. Values function as a "guiding force" that ensures natural and continuous change within the system. Change efforts without values tend to be short-term or generate resistance, whereas value-driven change creates conditions for the fundamental renewal of behaviors, relationships, and management principles. This demonstrates that the genuine development of quality culture is possible only through a value-based approach.

Within the framework of the study, several values have been identified as key directions of particular importance. One of these is collaboration and teamwork within organizations. Collaboration, mutual support, and collective action directed toward shared goals form the core values of quality culture. Strong collaboration within an organization enhances transparency in management and creates conditions for the development of innovative and adaptive behaviors. Ehlers states that trust, participation, and communication play a decisive role in the formation of quality culture (Ehlers, 2008). The study also found that institutions with a high level of collaboration exhibit more stable and sustainable quality indicators.

The next direction concerns organizational commitment and loyalty. Loyalty expresses employees' emotional, moral, and professional dedication to the institution. The renowned Chinese educator Mei Yi-chi noted that "a good university is measured not by its buildings, but by the quality of its academic staff" (Koyuncuoğlu, 2020). This perspective reaffirms the importance of values within an institution. The attitudes and behaviors demonstrated by academic staff toward the institution and its objectives reflect their level of loyalty. The presence of this value strengthens goal-oriented behaviors, increases a sense of responsibility, and supports the preservation of quality culture. The research revealed that in environments lacking the value of loyalty, quality remains largely formal and the potential for long-term development weakens.

Another significant direction relates to the values of equality and inclusivity within institutions. The study results confirm that quality culture develops more robustly in higher education institutions where equal opportunities and fair treatment are ensured. Equal rights enable individuals to feel valued, participate more actively in processes, and internalize the culture collectively. Integrity and transparency constitute another key value. Honesty is a fundamental prerequisite for the accurate evaluation of quality-related issues. Understanding the true nature of problems, presenting facts without distortion, and making transparent decisions form the foundation of quality culture. The study determined that as the level of integrity increases, the effectiveness of quality-oriented decisions also rises.

Empathy and active listening are highlighted as further important values. Empathy and the ability to listen actively are essential for understanding the root causes of quality problems. The research showed that when individuals listen to one another and understand different perspectives, organizational conflicts decrease and continuous quality improvement is enhanced.

Another critical issue is process orientation. One of the important findings of the study is that focusing solely on individual behavior is insufficient; primary attention must be directed toward the essence of processes. Systematic analysis of processes ensures that transformations within the institution are genuine, not artificial, and sustainable. This is also a fundamental condition for making quality culture development transparent and measurable. Focusing on processes rather than outcomes is among the key values. The study found that labeling work as "successful" or "unsuccessful" is often a retrospective interpretation. The core value lies in understanding the process, monitoring the changes it produces, and objectively assessing their impact on quality culture. This approach forms the main pillar of long-term quality development.

The analysis of various literature sources, comparison of theoretical frameworks, and examination of research results indicate that values are not merely an external element of quality culture, but the foundational factor that defines its structure, dynamics, and management philosophy. The development of quality culture depends on the systematic internalization of values within the institution, their integration into daily activities, and their acceptance as a priority in management processes. These findings reaffirm the importance of organizing activities aimed at improving quality culture in higher education institutions and other organizations within a value-based management framework. A value-based approach can be regarded as a roadmap for long-term, sustainable, and systematic quality and quality culture development.

Although Azerbaijan joined the Bologna Process and the European Higher Education Area in 2005, the accreditation criteria for higher education institutions in force until 2022 did not contain any specific indicator related to quality culture. In the 2022 accreditation criteria, indicator 2.3.2 addresses quality culture as follows: "Feedback in the area of quality assurance, monitoring of quality, tracking and research on the development of quality culture" (<https://www.tkta.edu.az/p/akkreditasiya-hesabatlari>). As can be seen, quality culture is mentioned only in terms of tracking and researching its development, without providing any additional

explanation. This does not create a clear understanding of how quality culture should actually be evaluated in higher education institutions.

A comparative analysis of accreditation reports from eighteen Azerbaijani universities conducted in 2023–2024 suggests that activities in the area of tracking quality culture development are still in their initial stage. Only after establishing an effective quality assurance system can institutions transition to the stage of continuous quality culture development. To achieve this, it is essential to transform quality assurance systems based on values — drawn from international experience and academic literature — into functional mechanisms and to make quality assurance policy a leading direction in the strategic management of universities. In this regard, a specific criterion concerning the development of quality culture is proposed for the new version of accreditation criteria for higher education institutions. The main requirement is that higher education institutions demonstrate justified results related to the development of quality culture (Criteria, 2025 draft project, unpublished).

The research findings confirm that values are the key component playing a decisive role in the formation and sustainable development of quality culture. Based on these findings, the following observations can be made:

Yorke notes that if higher education institutions wish to create a quality culture, they must first transform into “learning organizations.” Learning organizations are able to benefit from individual and collective experiences, compare their practices with other organizations, avoid short-term and superficial solutions, prioritize relationships based on trust and confidence, focus on continuous development, and accept leadership as a constantly evolving role (Yorke, 2000). In this sense, every educational institution aiming to improve quality culture can reach this goal gradually, step by step.

For the effective development of quality culture, the internalization of values at both conceptual and practical levels within the organization is essential. Without values, an organization operates merely through formal procedures and rules, which does not allow for the creation of long-term and sustainable quality. Values act as a driving mechanism across all stages — from strategic planning to daily operations. Therefore, organizations seeking to develop quality culture must understand what this culture means to them and strive to articulate it clearly.

As Srinivasan and Kurey state, quality culture can be truly understood when employees not only follow quality instructions but also observe quality-oriented behaviors in those around them, witness discussions about quality, and feel quality as part of their daily work environment (Srinivasan & Kurey, 2014). It is clear from the above that quality culture must be felt in the environment, become a topic of discussion, and constitute the essence of activities. Only then can one speak of genuine quality culture development.

As stated in the European Standards and Guidelines for Quality Assurance, quality assurance supports the development of quality culture by encompassing all stakeholders — from students to academic staff — in institutional leadership and management (ESG, 2015).

Although the development of value-based quality culture primarily emerges as a result of institutional strategic management, more significant outcomes can be achieved when all stakeholders actively participate in management and teaching processes. Paradoxically, ensuring such participation itself depends on the existence of quality culture. Therefore, the development of value-based quality culture may depend on the presence and potential of a supportive environment at the organizational level.

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