DIFFERENCE OF PRINCIPLES AND VALUES WITHIN THE ORGANIZATION: AN ARTIFICIAL INTELLIGENCE–SUPPORTED MIND MAP MODEL

Buket Karatop[1], Adem Akcakaya[2], Kübra Zayim Gedik[3], Mehmet Kosem[4], Yasemin Kirmanli[5]

ABSTRACT

This study proposes an artificial intelligence–supported mind-mapping model designed to enhance organizational learning and improve the internalization of corporate principles and values. Traditional value statements often remain static and fail to transform into actionable behaviors; therefore, organizations require technology-driven mechanisms that support shared understanding and continuous learning. The proposed model integrates four stages. First, existing organizational values are reviewed and redefined through strategic and participatory processes. Second, a Fuzzy Analytical Hierarchy Process (FAHP) is employed to determine value hierarchies and priorities using pairwise comparison matrices, providing a measurable decision-making structure. Third, qualitative and quantitative data from employees are analyzed to generate AI-supported mind maps that visualize how different groups perceive and interpret institutional values. These mind maps serve as a digital learning environment that strengthens awareness, reflection, and alignment. In the fourth stage, FAHP outputs, mind-map data, and employee insights are integrated to evaluate the coherence between value statements and organizational behavior. The findings demonstrate the potential of AI-based visualization tools to facilitate value-driven learning, reinforce organizational culture, and support technology-enhanced professional development. Recommendations for future research and practical applications in educational and organizational contexts are provided.

Keywords: Artificial intelligence**,** Organizational learning**,** Mind mapping**,** Value internalization**,** FAHP**,** Educational technology

1. Introduction

The sustainable success of organizations depends not only on strategic planning and operational efficiency but also on the alignment of shared principles and values within the institution. However, in modern organizations, the diversity of departments, employee groups, and leadership approaches often leads to differences in how these values are perceived and enacted. While such differences may threaten the coherence of organizational culture, when managed effectively, they can also generate innovative synergy.

In recent years, developments in digital transformation and artificial intelligence technologies have introduced new approaches to understanding and managing value differences within organizations. In particular, mind map models serve as powerful tools for visualizing complex relationships and systematically revealing diverse perspectives. AI-supported mind maps enable more transparent analysis of value conflicts, alignment points, and potential risk areas within organizations. Digital transformation therefore represents not only the adoption of technological tools but also the restructuring of organizational learning processes. Dörner and Rundel (2021) emphasize that digital transformation creates both crises and opportunities for organizational learning by establishing reciprocal learning relationships between individuals and institutions. In this context, digital transformation processes require organizations to develop flexible, adaptive, and continuously learning structures.

The internalization of organizational values by employees is a critical factor in ensuring the sustainability of organizational culture. Harvey, Osman, and Tourky (2021) argue that internalized values guide employee behavior and directly influence an organization's reputation among external stakeholders. When values are internalized, employees are more likely to act with ethical awareness and a sense of responsibility in their decision-making processes, thereby enhancing the quality of organizational learning.

Educational technologies make significant contributions to organizational learning by accelerating knowledge sharing and facilitating collaboration. Leigh (2024) demonstrates that digital learning tools transform

[1] Bezmialem Vakif University, Strategy and Quality Coordination Office, Coordinator; Associate Professor, Faculty of Health Sciences, Istanbul, Türkiye
ORCID: https://orcid.org/0000-0001-6053-1725
[2] Bezmialem Vakif University, Rector; Faculty of Medicine, Department of General Surgery, Istanbul, Türkiye.
ORCID: https://orcid.org/0000-0003-3116-7033
[3] Bezmialem Vakif University, Strategy and Quality Coordination Office, Academic Performance Officer; Vocational School of Health Services, Department of Medical Services and Techniques, Lecturer, Istanbul, Türkiye: ORCID: https://orcid.org/0000-0001-7945-3480
[4] Bezmialem Vakif University, Strategy and Quality Coordination Office, Computer Engineer, Istanbul, Türkiye.
[5] Bezmialem Vakif University, Strategy and Quality Coordination Office, Officer, Istanbul, Türkiye.

organizational culture, increase employee engagement, and support a culture of continuous learning. The effective use of educational technologies strengthens organizations' openness to change and their innovative capacity.

More recently, AI-supported models have emerged as a new paradigm in organizational learning. AI-based mind maps facilitate the visualization of complex information, enabling employees to establish conceptual connections more rapidly. As of 2025, it has been reported that AI-driven mind-mapping tools enhance team collaboration and improve efficiency in learning processes (Smith, 2025). By making value differences within organizations more visible, these tools help create a shared learning environment.

The aim of this study is to design an AI-supported mind map model that contributes to organizational learning and enables a more transparent analysis of differences in organizational principles and values. By integrating the opportunities offered by digital transformation with the internalization of ethical values, the proposed model seeks to support organizations in developing a sustainable learning culture.

2. Literature Review

Organizational learning is a multidisciplinary field that explains the transformation of individual knowledge into organizational knowledge and proposes practical approaches across the interconnected dimensions of people, processes, and technologies. In their comprehensive study, Basten and Haamann (2018) synthesized 18 organizational learning approaches and demonstrated how learning is positioned within organizational transformation, offering applicable frameworks across people-oriented (seven), process-oriented (nine), and technology-oriented (two) domains. In the context of higher education, scholars emphasize the diversification of organizational learning theories and the use of institution-specific paradigms, highlighting that the learning organization approach plays a guiding role in institutional change processes within universities (Dee & Leišytė, 2016).

Value-based leadership is a key determinant in shaping a culture that supports sustainable organizational change. Purnomo and Ausat (2024) show that, in dynamic business environments, value-based leadership transforms organizational culture, ensures continuity in change management, and strengthens stakeholder trust. At the intersection of organizational psychology and management theory, the work of Küçük Yılmaz and Flouris (2019) provides an interdisciplinary framework that systematically discusses the functions, dynamics, and organizational impact of values. Similarly, Mueller and Straatmann (2014) emphasize how values can be embedded into managerial mechanisms to foster integration and enhance organizational well-being, thereby contributing new momentum to research on organizational values.

Artificial intelligence has the potential to accelerate access, inclusivity, and lifelong learning in education. At the same time, the rapid development of AI poses the risk of outpacing existing policies and regulations, necessitating governance approaches grounded in human-centered principles and equity. Recent studies indicate that AI integration enriches learning quality, creativity, and individualized support mechanisms, while also highlighting the need for balanced governance that addresses both benefits and challenges (Garzón et al., 2025). Contemporary reviews on the role of AI in transforming learning environments further demonstrate that, alongside goals such as improving access and reducing disparities, the institutionalization of ethical principles in the design and implementation of AI systems is critical (Mariyono & Nur Alif, 2025).

Mind mapping is a learning tool that reduces cognitive load by visualizing conceptual relationships and supporting processes such as idea generation, note-taking, organization, and concept development. Meta-analytic evidence evaluating the effects of mind map–based instruction on cognitive learning outcomes reveals mixed results, indicating that design quality and implementation context significantly influence effect size (Shi et al., 2023). Systematic reviews suggest that mind maps support structured thinking and conceptual bridging in algorithmic and procedural learning contexts (Kefalis et al., 2025). Experimental studies further demonstrate that mind mapping in programming education can enhance learners' computational thinking skills and self-efficacy, thereby facilitating learning transfer in complex knowledge domains (Guo et al., 2024).

Multi-criteria decision-making (MCDM) methods enable transparent, comparative, and consistent decision-making in complex real-life problem areas such as education and human resource management. A systematic review of MCDM approaches in higher education indicates that criterion weighting and alternative comparison are effective in jointly evaluating program, instructional, and environmental components (Yüksel et al., 2023). In the context of organizational leadership selection, FAHP applications enhance the reliability of decision-making processes by systematically integrating difficult-to-measure competencies such as cross-cultural intelligence and

crisis management (Timi et al., 2025). Although FAHP is widely used in academic research, studies specifically applying FAHP to the evaluation of organizational principles and values remain limited. Nevertheless, relevant applications can be found within the broader domains of human resource management and organizational learning (e.g., Salehzadeh & Ziaeian, 2024).

Despite the growing body of literature on organizational learning, value-based leadership, artificial intelligence in education, and mind mapping techniques, existing studies largely address these domains in isolation. Empirical applications that integrate AI-supported visualization tools with multi-criteria decision-making methods to analyze differences in organizational principles and values remain limited. In particular, the use of FAHP combined with AI-supported mind mapping as a learning-oriented analytical model has not been sufficiently explored. This study addresses this gap by proposing an integrated model that makes value differences visible and supports organizational learning processes.

3. Method

The Analytic Hierarchy Process (AHP), developed by Thomas Saaty (1977), is a decision-making method that transforms complex problems into a hierarchical structure. Decision-makers define criteria and sub-criteria and then determine their relative importance through pairwise comparisons.

The AHP process can be summarized in the following steps:

- **Problem definition:** Clearly defining the decision problem and its objectives.
- **Hierarchy construction:** Identifying criteria and sub-criteria and structuring the decision problem into a hierarchical model consisting of the main goal at the top, followed by criteria and sub-criteria at lower levels.
- **Pairwise comparisons:** Conducting pairwise comparisons at each level of the hierarchy to evaluate the relative importance of criteria.
- **Priority calculation:** Calculating priority weights using pairwise comparison matrices and checking consistency to ensure reliable results.
- **Synthesis of results:** Aggregating priority weights to determine the overall ranking of alternatives.

The Fuzzy Analytic Hierarchy Process (FAHP) extends classical AHP by modeling uncertainty in human judgments through fuzzy numbers, thereby producing more reliable results. Instead of requiring precise numerical judgments, FAHP allows decision-makers to use linguistic scales, enabling more natural and realistic evaluations. While preserving the strengths of classical AHP, FAHP more effectively captures uncertainty, making it particularly suitable for assessing abstract criteria such as ethical values, cultural differences, and educational contexts. For this reason, FAHP is considered more appropriate than classical AHP for analyzing differences in organizational principles and values.

The proposed model consists of four stages. First, existing organizational values and principles are reviewed and redefined or updated in line with strategic objectives, stakeholder expectations, and prevailing cultural dynamics. Second, pairwise comparison matrices are developed, and value priorities are analyzed using the Fuzzy Analytic Hierarchy Process (FAHP) to establish a more objective and measurable weighting structure. Third, qualitative and quantitative data are collected from employees, and AI-supported mind maps are generated to visualize how different organizational groups perceive, interpret, and apply organizational values. This stage also functions as an internal awareness and learning mechanism that supports cultural transformation. In the fourth stage, FAHP results, mind map outputs, and employee feedback are analyzed together in an integrated evaluation process to identify the level of alignment between organizational values and employee behaviors.

Step 1: In the sample application, organizational values and principles were reviewed, and five core values were identified. The definitions of these values and principles were also re-examined.

Step 2: Pairwise comparison matrices were constructed (Table 1). Levels of importance (Very Important, Important, Moderately Important, Less Important, and Equal) were assessed by employees at different hierarchical levels. Separate participant groups were formed for senior management, middle management, and employees.

Step 3: This stage involved the implementation of the assessment process. Prior to data collection, participants reviewed and read the definitions of organizational values and principles to ensure informed and focused decision-

making. This stage also functioned as a learning phase in which employees reflected on organizational values and engaged in value-based judgment and decision-making.

	VI	I	MI	LI	E	LI	MI	I	VI	
Value 1										Value 2
Value 1										Value 3
Value 1										Value 4
Value 1										Value 5
Value 2										Value 3
Value 2										Value 4
Value 2										Value 5
Value 3										Value 4
Value 3										Value 5
Value 4										Value 5

Table 1. Pairwise comparison matrix

Step 4: The collected data, expressed through linguistic judgments, were first converted into fuzzy numbers in accordance with AHP consistency requirements. Following the FAHP procedure, priority weights were calculated. The fuzzy comparison matrices of each participant group were then aggregated using geometric means to obtain a single weight value for each group. As a result, a distinct set of weights was generated for each hierarchical group.

4. Findings

The analysis indicates that the prioritization of organizational values differs significantly across hierarchical levels within the organization. These differences reveal distinct value orientations among senior managers, managers, and employees.

Table 2 presents the FAHP-derived weight values of the five organizational values for each hierarchical group. The results demonstrate that value priorities are not uniformly distributed across the organizational structure.

Table 2. Distribution of organizational values across hierarchical levels

Values	**Senior Managers**	**Managers**	**Employees**	**Everyone**
Value 1	0.276273658	0.090573987	0.17387336	0.101671
Value 2	0.111385144	0.151359969	0.2354248	0.249573
Value 3	0.209377431	0.343310677	0.09013501	0.204900
Value 4	0.230430062	0.343310677	0.40135203	0.363561
Value 5	0.172533705	0.07144469	0.0992148	0.080295
Total	**1.000**	**1.000**	**1.000**	**1.000**

The priority rankings of organizational values are summarized in **Table 3**. Senior managers primarily prioritize **Value 1**, whereas managers emphasize **Value 3 and Value 4**. Employees predominantly prioritize **Value 4**, which also emerges as the most prominent value across all participants.

This distribution suggests a closer alignment between managers and employees in terms of organizational value perceptions, while senior management displays a distinct prioritization pattern.

Table 3. Hierarchical prioritization of organizational values

Priority	Senior Managers	Managers	Employees	Everyone
1	Value 1	Value 3–4	Value 4	Value 4
2	Value 4	Value 3–4	Value 2	Value 2
3	Value 3	Value 2	Value 1	Value 3
4	Value 5	Value 1	Value 5	Value 1
5	Value 2	Value 5	Value 3	Value 5

Table 3 provides a mathematical mapping of participants' perceptions of organizational values and principles, illustrating how value priorities are cognitively positioned across hierarchical levels.

5. Discussion

The findings of this study demonstrate clear hierarchical differences in the prioritization of organizational values, indicating that organizational principles are not uniformly perceived or internalized across different levels of the hierarchy. Such differentiation supports the view that organizational learning and value alignment are dynamic processes shaped by positional roles and daily practices rather than static institutional statements. This observation is consistent with organizational learning literature emphasizing the role of context and hierarchical positioning in shaping sense-making and learning processes within organizations (Basten & Haamann, 2018).

The relatively closer alignment observed between managers and employees, particularly in the prioritization of **Value 4**, may reflect shared operational experiences and interaction patterns. In contrast, the distinct prioritization patterns of senior management suggest that strategic-level interpretations of organizational values may diverge from those at operational levels. This finding aligns with studies on value-based leadership, which highlight that leadership perspectives significantly influence how values are framed, communicated, and enacted within organizations (Purnomo & Ausat, 2024; Küçük Yılmaz & Flouris, 2019).

From an organizational learning and digital transformation perspective, the integration of FAHP with AI-supported mind mapping provides a structured mechanism for making implicit value differences visible and open to reflection. Consistent with recent research on artificial intelligence in learning environments, this approach supports reflective learning by transforming subjective judgments into visual and analyzable representations (Garzón et al., 2025; Mariyono & Nur Alif, 2025). By enabling organizations to identify areas of alignment and divergence, the proposed model contributes to the development of shared understanding and supports continuous learning processes.

6. Conclusion and Recommendations

The proposed model offers a flexible and transferable framework that can be applied across organizations of different sizes and sectors. During the implementation process, organizational values and principles require deliberate reflection and discussion by employees, fostering deeper engagement with institutional norms. This process not only supports structured decision-making mechanisms but also creates an organizational learning environment that enhances ethical awareness among employees.

The findings of the study demonstrate that implicit perceptions of organizational values can be systematically made visible and transformed into explicit and measurable information. This transformation enables organizations to identify both their cultural strengths and areas requiring improvement. In this respect, the proposed model provides a strategic contribution to organizational learning and cultural development processes by supporting value alignment, reflection, and continuous learning.

REFERENCES

Basten, D., & Haamann, T. (2018). Approaches for organizational learning: A literature review. *Sage Open*, *8*(3), 2158244018794224.

Dee, J. R., & Leišytė, L. (2016). Organizational learning in higher education institutions: Theories, frameworks, and a potential research agenda. In *Higher education: Handbook of theory and research* (pp. 275-348). Cham: Springer International Publishing.

Dörner, O., & Rundel, S. (2021). *Organizational Learning and Digital Transformation: A Theoretical Framework*. In: Digital Transformation of Learning Organizations. Springer.

Garzón, J., Patiño, E., & Marulanda, C. (2025). Systematic review of artificial intelligence in education: Trends, benefits, and challenges. *Multimodal Technologies and Interaction*, *9*(8), 84.

Guo, R., Zheng, Y., & Miao, H. (2024, December). The influence of mind mapping on computational thinking skills and self-efficacy in students' learning of graphical programming. In *Frontiers in Education* (Vol. 9, p. 1479729). Frontiers Media SA.

Harvey, W. S., Osman, S., & Tourky, M. (2021). *Internalising Values in Organisations*. Exeter Business School Report.

Kefalis, C., Skordoulis, C., & Drigas, A. (2025). *A systematic review of mind maps, STEM education, algorithmic and procedural learning. Computers, 14 (6), 204*.

Kucuk Yilmaz, A., & Flouris, T. G. (2019). Organizational values and culture: the management and organization psychology. In *Values, Ergonomics and Risk Management in Aviation Business Strategy* (pp. 1-44). Singapore: Springer Singapore.

Leigh, D. (2024). *The Role of Educational Technology in Shaping Organizational Culture*. Journal of Organizational Culture, Communications and Conflict, 28(S3), 1–3.

Mariyono, D., & Nur Alif Hd, A. (2025). AI's role in transforming learning environments: a review of collaborative approaches and innovations. *Quality Education for All*, *2*(1), 265-288.

Mueller, K., & Straatmann, T. (2014). Organizational values. In *Encyclopedia of quality of life and well-being research* (pp. 4525-4531). Springer, Dordrecht.

Purnomo, Y. J., & Ausat, A. M. A. (2024). The Role of Value-Based Leadership in Shaping an Organizational Culture that Supports Sustainable Change. *Journal of Contemporary Administration and Management (ADMAN)*, *2*(1), 430-435.

Saaty, T. L. (1977). A scaling method for priorities in hierarchical structures. *Journal of mathematical psychology*, *15*(3), 234-281.

Salehzadeh, R., & Ziaeian, M. (2024). Decision making in human resource management: a systematic review of the applications of analytic hierarchy process. *Frontiers in Psychology*, *15*, 1400772.

Shi, Y., Yang, H., Dou, Y. *et al.* (2023). Effects of mind mapping-based instruction on student cognitive learning outcomes: a meta-analysis. *Asia Pacific Educ. Rev.* **24**, 303–317. https://doi.org/10.1007/s12564-022-09746-9.

Smith, A. (2025). *AI Mind Map Generators as Emerging Learning Tools*. ScreenApp Research Blog.

Timi, A., Okunola, A., & Paul, B. (2025). FAHP Application in Selecting Global Organization Leaders Based on Cross-Cultural Intelligence and Crisis Management.

Yüksel, F. Ş., Kayadelen, A. N., & Antmen, F. (2023). A systematic literature review on multi-criteria decision making in higher education. *International journal of assessment tools in education*, *10*(1), 12-28.

