

Identification and Classification of Factors Affecting the Implementation of Artificial Intelligence in Organizations: A Meta-Synthesis Approach

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Abstract

In recent years, artificial intelligence (AI), as one of the most significant transformative technologies, has attracted extensive attention from organizations, and its adoption has become an influential factor in improving efficiency, enhancing decision-making quality, innovating services, and creating competitive advantage. However, the successful implementation of AI in organizations is not limited merely to access to technology; rather, it is influenced by a set of intra-organizational and extra-organizational factors. Accordingly, the present study aimed to identify and classify the factors affecting the implementation of AI in organizations using a meta-synthesis approach. In terms of purpose, this study is applied research, and in terms of methodology, it is a qualitative study based on meta-synthesis. The research population consisted of domestic and international studies related to the subject, which were collected from valid scientific databases within a specified time frame. After conducting the stages of searching, screening, quality assessment, and eliminating irrelevant or duplicate studies, 44 articles were selected for final analysis. Subsequently, qualitative data were extracted through coding, analysis, and synthesis of concepts, and similar indicators were categorized into subcategories and main categories. The findings indicated that the factors affecting the implementation of AI in organizations can be classified into six main dimensions: technological dimension, human dimension, organizational dimension, strategic dimension, environmental dimension, and ethical-social dimension. The results demonstrate that success in AI deployment requires simultaneous attention to technical infrastructures, human skills and acceptance, managerial support, strategic alignment, environmental conditions, and ethical considerations. These findings can provide a theoretical and practical foundation for managers, policymakers, and researchers in the development and effective implementation of AI in organizations.

Keywords: *Artificial Intelligence, Organizational Implementation, Meta-Synthesis, Influencing Factors*

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1. Introduction

Artificial intelligence (AI) has become one of the most influential technologies shaping contemporary organizational transformation, because it enables organizations to automate complex processes, improve analytical capacity, enhance decision-making, redesign service delivery, and create new sources of competitive advantage. Unlike earlier waves of information technology adoption, AI is not limited to operational digitization or process automation; rather, it introduces learning, prediction, adaptation, and autonomous decision-support capabilities into organizational systems. In the digital transformation era, organizations increasingly rely on AI to improve efficiency, reduce uncertainty, personalize services, optimize resource allocation, and strengthen performance outcomes [1, 2]. As a result, AI implementation has become a strategic concern for managers, policymakers, and researchers across various sectors, including banking, healthcare, telecommunications, supply chain management, hospitality, higher education, public administration, and manufacturing [3-9].

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Despite the growing enthusiasm surrounding AI, its successful implementation in organizations remains a complex and uncertain process. Many organizations invest in AI-based systems but fail to achieve the expected outcomes due to insufficient technological readiness, weak data infrastructure, organizational resistance, lack of strategic alignment, ethical concerns, or inadequate human capabilities. AI adoption therefore cannot be understood merely as a technical decision; it is a multidimensional organizational phenomenon shaped by the interaction of technological, human, organizational, strategic, environmental, and ethical-social factors [10-12]. This complexity explains why some organizations are able to integrate AI into their core processes and create value, while others remain at the experimental stage or face failure during implementation.

From a technological perspective, AI implementation depends heavily on the quality of digital infrastructure, system compatibility, data availability, data quality, information security, and integration capacity. AI systems require reliable, accessible, standardized, and high-quality data to generate meaningful outputs. Poor data quality, fragmented databases, incompatible systems, and weak information governance can significantly reduce the effectiveness of AI applications and undermine organizational trust in AI-based decisions [13-15]. Studies on AI adoption in organizations have repeatedly emphasized that technological readiness, system capability, digital maturity, and technical competence are among the most important prerequisites for successful implementation [16-18]. Moreover, AI technologies often involve high levels of complexity, which may increase implementation risk and require more advanced technical expertise, specialized infrastructure, and continuous system monitoring [19, 20].

At the same time, the human dimension plays a decisive role in AI implementation. Even when organizations possess sufficient technological resources, implementation may fail if employees lack the required skills, do not trust AI systems, perceive AI as a threat, or resist changes in work routines. Employees' attitudes toward AI, perceived usefulness, perceived risks, psychological readiness, trust, intention to use, and fear of job replacement can all influence the acceptance and effective use of AI in organizational contexts [21-24]. Human competence is particularly important because AI implementation usually requires data literacy, digital skills, analytical thinking, and the ability to collaborate with intelligent systems. In healthcare, for example, the adoption of AI depends not only on technological capability but also on providers' training, experience, confidence, and willingness to integrate AI into professional practice [25, 26]. Public perceptions and industry-level attitudes toward AI also shape the broader acceptance environment in which organizations operate [27].

Organizational factors constitute another central layer of AI implementation. Organizational culture, structure, leadership, resource allocation, change management, and internal policies can either facilitate or inhibit AI adoption. Organizations with flexible structures, innovation-oriented cultures, supportive leadership, and strong learning capacity are more likely to integrate AI effectively into their processes [28, 29]. Conversely, rigid structures, fragmented responsibilities, insufficient managerial commitment, and weak change management can prevent AI from moving beyond pilot projects. Senior management support is especially critical because AI implementation often requires long-term investment, cross-functional coordination, risk tolerance, and strategic resource allocation [30, 31]. In public-sector settings, organizational readiness, transparency, managerial participation, and institutional support are particularly important because AI adoption is closely related to accountability, service legitimacy, and citizen trust [32-34].

The strategic dimension of AI implementation has also received increasing attention. Organizations cannot implement AI successfully by treating it as an isolated technological tool. Rather, AI must be aligned with organizational goals, business models, operational priorities, and digital transformation strategies. Strategic vision, AI governance, innovation orientation, and data-driven decision-making determine whether AI creates sustainable value or remains a fragmented technical initiative [35, 36]. In this regard, AI implementation strategy should clarify why AI is adopted, where it should be applied, how it supports organizational objectives, and what capabilities are needed to sustain it. Research on AI implementation strategy in business emphasizes that organizations need a coherent roadmap, leadership commitment, financial investment, and alignment between AI capabilities and organizational priorities [31]. In higher education institutions, strategic factors such as vision, leadership, resource mobilization, and policy alignment are also essential for AI-based transformation [8].

Environmental and institutional conditions further influence AI implementation. Organizations do not adopt AI in isolation; they operate within regulatory, competitive,

industrial, and social environments that shape both opportunities and constraints. Competitive pressure may encourage organizations to adopt AI to enhance productivity, innovation, and service quality, while regulatory uncertainty may slow down adoption or create compliance risks [37, 38]. Government support, industry standards, legal frameworks, and institutional legitimacy can facilitate AI implementation by reducing uncertainty and encouraging investment. In small and medium-sized enterprises, for instance, the Technology–Organization–Environment framework highlights the combined role of technological readiness, organizational capacity, and environmental pressure in AI adoption for sustainable business performance [17]. Systematic reviews also show that environmental and institutional factors are consistently identified as important determinants of AI adoption across organizational contexts [11].

Alongside technological and organizational considerations, ethical and social issues have become increasingly important in AI implementation. AI systems raise concerns related to transparency, accountability, privacy, bias, fairness, explainability, and responsible use. These concerns are particularly significant because AI often influences decisions that affect employees, customers, patients, citizens, and other stakeholders. If organizations neglect ethical and social considerations, AI implementation may generate distrust, resistance, reputational risk, and legal challenges [39, 40]. Ethical barriers and the absence of clear standards may also inhibit AI adoption, especially in sectors where decisions carry social, environmental, or human consequences. Therefore, responsible AI implementation requires not only technical capability but also governance mechanisms, ethical guidelines, transparency practices, and accountability structures [13, 41].

The existing literature shows that AI implementation has been examined from various theoretical and methodological perspectives. Some studies have used technology adoption models and the diffusion of innovation theory to explain how relative advantage, compatibility, complexity, and innovativeness affect AI adoption decisions [36]. Others have relied on the Technology–Organization–Environment framework to examine the combined influence of technical, organizational, and external factors [17, 37]. Several studies have focused on specific industries, such as telecommunications, healthcare, supply chain management, accounting, banking, and public services, each emphasizing different contextual requirements for AI implementation [3, 5, 6, 20, 30]. Other studies have examined barriers, success factors, organizational readiness, employee acceptance, or strategic enablers [10, 16, 21, 28, 42]. This body of research confirms the importance of AI implementation but also reveals considerable dispersion in terminology, conceptualization, and classification.

This dispersion creates a significant research gap. Although many studies have identified individual factors affecting AI adoption and implementation, the findings are scattered across different industries, theoretical frameworks, research methods, and levels of analysis. Some studies emphasize technological infrastructure and data quality, whereas others focus on human acceptance, organizational culture, leadership, environmental pressure, or ethical challenges. As a result, there is still a need for an integrated classification that brings together these fragmented findings and organizes them into a coherent conceptual framework. Meta-synthesis is particularly appropriate for this purpose because it enables researchers to systematically review, interpret, compare, and integrate qualitative and conceptual findings from previous studies. Through meta-synthesis, it becomes possible to move beyond a descriptive literature review and generate a higher-level understanding of the major dimensions and categories shaping AI implementation in organizations.

Given the multidimensional nature of AI implementation, a comprehensive classification of influencing factors can contribute to both theory and practice. Theoretically, it can clarify the conceptual boundaries among technological, human, organizational, strategic, environmental, and ethical-social factors and provide a foundation for future model development. Practically, it can help managers and decision-makers diagnose organizational readiness, identify implementation barriers, prioritize resources, design training programs, strengthen data governance, align AI with strategy, and develop responsible AI policies. Since AI implementation is increasingly linked to organizational efficiency, innovation, competitiveness, and sustainability, such a classification can guide organizations toward more systematic and evidence-based implementation decisions [9, 43, 44].

The aim of the present study is to identify and classify the factors affecting the implementation of artificial intelligence in organizations using a meta-synthesis approach.

2. Methodology

In the present study, a qualitative meta-synthesis approach was employed to identify and classify the factors

affecting the implementation of artificial intelligence (AI) in organizations. The selection of this approach was based on the multidimensional and complex nature of the subject, as well as the fragmentation of findings from previous studies across different scientific domains. In recent years, numerous studies have been conducted on the adoption, application, and deployment of AI in organizations; however, these studies have often been scattered, carried out in different industrial contexts, and grounded in diverse theoretical frameworks. Such circumstances have led to the absence of an integrated understanding of the factors influencing the successful implementation of AI in organizations. Meta-synthesis, as an advanced qualitative research method, enables the systematic examination, interpretation, and integration of findings from previous studies, facilitating the extraction of comprehensive conceptual patterns and theoretical frameworks. In fact, meta-synthesis goes beyond a simple literature review by conducting an in-depth analysis of concepts and findings from prior studies, thereby generating new knowledge that can contribute to the development of theories and conceptual models within the field under investigation. In the present study, this approach was utilized to identify a comprehensive set of factors influencing AI implementation in organizations and to present them within a structured classification framework that can serve as a foundation for future studies and as guidance for managers and organizational decision-makers.

The meta-synthesis process in this study was conducted systematically and through several consecutive stages to ensure the comprehensiveness and validity of the findings. The first step involved clearly defining the research problem and formulating the primary research question. The main research question was developed based on identifying which factors influence the successful implementation of AI in organizations and how these factors can be classified within a conceptual framework. Following the formulation of the research question, a systematic search of scientific sources was initiated. At this stage, an effort was made to identify all studies related to the subject through the use of relevant keywords and different combinations of those keywords. For this purpose, international databases such as Scopus, Web of Science, ScienceDirect, Springer, Emerald, IEEE, and Google Scholar, as well as several domestic scientific databases, were searched. Keywords such as “Artificial Intelligence Implementation,” “AI Adoption,” “AI Organizational Factors,” “Application of Artificial Intelligence in Organizations,” and “Factors Affecting Technology Adoption,” along with various combinations of these terms, were employed in the search process. Boolean operators such as AND and OR were also used to improve search precision and identify more relevant studies. The time frame for the search was primarily limited to studies published between 2019 and 2026 in order to examine the most recent research in this field.

Following the initial search, a broad collection of potentially relevant studies was identified. At this stage, a considerable number of articles were extracted from different scientific databases, indicating the extensive body of research conducted on AI and its organizational applications. However, not all identified studies were necessarily appropriate for the objectives of the present research, and therefore a rigorous screening and selection process was required. In the first stage of screening, duplicate articles retrieved from multiple databases were identified and removed. Subsequently, the titles and abstracts of the articles were reviewed to eliminate studies that did not directly address AI implementation at the organizational level. For example, some studies focused exclusively on the development of technical AI algorithms or examined technical applications in areas such as image processing or machine learning without addressing organizational, managerial, or technology adoption dimensions. Despite their scientific value, such studies were not aligned with the purpose of the present research, which specifically focused on organizational and managerial factors influencing AI implementation; therefore, they were excluded from the analysis process.

After this stage, the full texts of the remaining articles were carefully reviewed. Specific inclusion criteria were established for selecting studies for the research. These criteria included a focus on AI within an organizational context, examination of factors affecting the adoption or implementation of AI, provision of a clear and transparent methodology, and publication in reputable scientific sources. In addition, efforts were made to select studies with sufficient scientific validity in terms of research methodology, data quality, and findings. Some articles were excluded due to the absence of a clear methodology, lack of direct relevance to the research question, or limited analytical scope. This multi-stage screening process ultimately resulted in the selection of a set of studies with the highest relevance and credibility for the final analysis.

Following the determination of the final set of studies, the stage of data extraction and concept coding began. At this stage, the full texts of the selected articles were carefully

examined, and sections referring to factors affecting the implementation or adoption of AI were extracted. These sections included research findings, conceptual models proposed in the articles, empirical results, managerial recommendations, and theoretical analyses. The extracted data were then analyzed using qualitative coding techniques. In the first step, open coding was conducted, during which initial concepts were identified and labeled. At this stage, a substantial number of primary codes were extracted, each representing a factor, barrier, or driver associated with AI implementation in organizations. In the next step, axial coding was performed, and similar or related codes were grouped into broader categories. This process enabled the researchers to identify relationships among concepts and develop a more coherent conceptual structure. Finally, through selective coding, the main categories representing the key dimensions of AI implementation in organizations were extracted.

In the subsequent stage, the findings derived from coding and concept extraction were analyzed and synthesized. At this stage, efforts were made to identify recurring patterns and common factors by comparing the findings of different studies. Many studies referred to similar factors, although they often used different terminology. For instance, some studies referred to "information technology infrastructure," others to "technological readiness," and still others to "digital capabilities," all of which were conceptually related to the technological dimension of the organization. Through the analysis and integration of these concepts, broader and more comprehensive classifications were developed. As a result, the identified factors were classified into several major dimensions, including technological factors, organizational factors, human factors, strategic factors, and environmental factors. These dimensions served as a framework for a better understanding of the AI implementation process in organizations and demonstrated that successful AI deployment depends not only on technical capabilities, but also on the interaction of human, managerial, and environmental factors.

To enhance the validity and trustworthiness of the research findings, all stages of the study were documented systematically and transparently. The use of reputable scientific sources, the diversity of the selected studies, and the careful examination of article contents contributed to improving the validity of the study. Furthermore, the coding and classification processes were conducted in multiple stages with repeated reviews to ensure conceptual accuracy and consistency. In the final analysis, efforts were also made to compare the findings with existing theoretical frameworks in the literature on technology and organizational innovation in order to determine their consistency with established knowledge. These measures ensured the scientific reliability of the findings and enabled the study to provide a relatively comprehensive picture of the factors affecting AI implementation in organizations.

The process of selecting and screening studies was also conducted in multiple stages to ensure that only relevant and high-quality studies remained for the final analysis. In the initial search stage, approximately 500 potentially relevant articles were identified from scientific databases. After removing duplicate articles, the number of studies decreased to approximately 420. During the title and abstract review stage, articles not directly related to AI implementation in organizations were excluded, reducing the number of sources to approximately 280 articles. In the next stage, through a more detailed review of the article topics and the removal of studies unrelated to organizational dimensions, the number of articles was reduced to approximately 160. Subsequently, the full texts of these articles were reviewed, and studies lacking appropriate methodology or sufficient relevance to the research question were excluded, resulting in 95 articles. In the quality assessment stage, studies were evaluated based on criteria such as methodological rigor, clarity of findings, and relevance to the research topic. Following this evaluation, several studies were excluded, and ultimately 60 articles met the initial qualification criteria. After conducting the final analysis and selecting studies with the highest conceptual relevance to the research objective, a total of 44 articles were chosen as the primary sources for the meta-synthesis and served as the basis for concept extraction and final analysis.

Table 1. Meta-Synthesis and Study Screening Process

Stage	Description of Activity	Number of Articles
Stage 1	Initial identification of articles from scientific databases	500
Stage 2	Removal of duplicate articles	420
Stage 3	Review of titles and abstracts	280
Stage 4	Elimination of articles unrelated to organizational dimensions	160
Stage 5	Full-text review of articles	95
Stage 6	Quality and methodological assessment	60
Stage 7	Final selection of eligible articles for meta-synthesis	44

3. Findings and Results

In the final analytical stage of the study, following the multi-stage screening of scientific sources, a set of 44 valid, relevant, and eligible studies was selected, forming the main basis of the present meta-synthesis. Examination of these studies indicates that the selected research works are considerably diverse in terms of application area, type of organization, research method, theoretical framework, and level of analysis. This diversity helped the present study provide a comprehensive picture of the factors affecting the implementation of artificial intelligence (AI) in organizations. A major proportion of these studies were published between 2019 and 2026, indicating the rapid growth of research related to AI in recent years. A considerable number of the studies were conducted in the fields of business, technology management, healthcare, supply chain, finance and banking, higher education, and the public sector, showing that AI implementation has become one of the priorities of digital transformation across different organizational domains. The selected studies included a combination of quantitative studies based on structural equation modeling, qualitative studies based on interviews and content analysis, mixed-methods studies, comparative studies, systematic reviews, and conceptual analyses. This methodological diversity enabled the present study to examine influencing factors from various human, organizational, technological, and environmental perspectives. For example, the study by Ambati et al. (2020) used a survey approach to examine employees' perspectives on AI adoption in organizations, whereas Merhi (2023) employed structural equation modeling to analyze the key success factors in AI implementation. Khalifa et al. (2023) examined the factors affecting technology adoption within the TOE framework, and Weinert et al. (2022) analyzed the perspectives of information technology managers in hospitals regarding implementation factors. In contrast, Abdallah et al. (2025) comparatively examined AI implementation in public and private accounting sectors, while Khanfar et al. (2025) provided a systematic review of previous studies. Analysis of the studies shows that many of them referred to common factors, although these factors may have been expressed using different terms or within different conceptual frameworks. For example, some studies referred to "technological readiness," some to "digital infrastructures," and others to "technological capacity," all of which fall under technological factors. Likewise, many studies addressed human issues such as skills, training, trust, and employees' attitudes, indicating the importance of human resources in AI adoption and implementation. At the organizational level, factors such as organizational structure, culture, senior management support, financial resources, and digital strategies were the most frequently repeated across studies. At the environmental level, factors such as regulations, competitive pressure, industrial environment, and government support were observed in most studies. One notable feature of the selected studies is that many of them also emphasized barriers and challenges. For example, studies such as Alsheibani et al. (2019), Gruenbichler (2023), and Moghayedi (2026) focused on inhibiting factors such as the absence of ethical standards, employee resistance, poor data quality, and high costs. In contrast, some studies such as Merhi and Harfouche (2024) and Phakamach (2025) focused on facilitating factors such as strategic support, financial resources, and organizational readiness. Moreover, some studies focused on specific industries; for instance, Chen (2021) and Hameed (2023) examined factors affecting AI adoption in healthcare industries, whereas Ronaghi (2023) investigated the effects of AI adoption in manufacturing industries. The synthesis of these studies indicates that AI implementation is a multifaceted process influenced by the interaction of various technological, human, organizational, environmental, and strategic factors, and this multidimensional nature highlights the necessity of conducting a meta-synthesis. Overall, examination of the characteristics of the selected studies shows that although the studies differ in scope and method, they all emphasize, in one way or another, the importance of

factors such as technological infrastructure, employee skills, organizational culture, senior management support, data quality, and the institutional environment. This relative coherence in the findings made it possible to develop a comprehensive and multilayered framework.

After selecting the 44 eligible studies, the stage of data extraction and identification of initial concepts and indicators began. At this stage, the full texts of all selected studies were carefully reviewed, and sections referring to factors affecting the adoption or implementation of AI in organizations were extracted. These factors could have been presented in the conceptual model, empirical findings, hypotheses, statistical analysis results, interviews, discussion and conclusion sections, or even the theoretical literature sections of the studies. Subsequently, all these data were analyzed using open coding, and the initial concepts were extracted from them. These concepts represent factors introduced in different studies as key determinants of AI implementation in organizations. Analysis of the extracted concepts showed that most indicators could be classified into five main areas: technological indicators, human indicators, organizational indicators, environmental indicators, and strategic indicators. In the technological area, indicators such as data quality, technology integration capability, information security, digital infrastructure, technological complexity, and technology usability were the most frequently repeated. In the human area, concepts such as employee skills, trust in technology, attitude, digital experience, employee resistance, and fear of job replacement were observed. At the organizational level, factors such as organizational culture, financial resources, structure, leadership, change management, policies, and internal processes played an important role. At the environmental level, factors such as competitive pressure, laws and regulations, government support, and the industrial environment were emphasized. At the strategic level, concepts such as the organization's digital vision, strategic alignment, readiness for innovation, and data-driven decision-making were extracted.

Different studies referred to different sets of these factors, and their examination shows that many concepts are shared across several studies. For example, data quality was introduced as a critical factor in the studies of Merhi (2023), Kurup and Gupta (2022), Chen (2021), and Rane (2024). The role of employee skills can be observed in studies such as Ambati (2020), Weinert (2022), Usmani (2023), and Hameed (2023). Organizational culture and management support were also repeated in most studies, including Khalifa (2023), Dorhetso (2023), Phakamach (2025), and Mollaei (2024). In addition, trust in technology, positive attitude, information security, and role clarity were among the concepts repeatedly reported in various studies in the human and social domains. This overlap and repetition of concepts indicate that AI implementation is a complex yet pattern-based process. Although the organizational and industrial contexts of each study differ, a set of indicators is repeated across most organizations, which further increases the importance of concept classification. To provide a clearer picture of the extracted concepts, these concepts were integrated into a comprehensive table in the next stage to show which indicators were addressed by each study.

Table 2. Initial Indicators and Concepts Extracted from the Selected Studies

Source	Extracted Concepts and Indicators
Ambati (2020)	Employee attitude – trust – digital skills – organizational culture – employee resistance – management support
Merhi (2023)	Data quality – technological infrastructure – organizational readiness – technical competence – information security – digital strategy
Khalifa (2023)	Technological factors (compatibility, relative advantage) – organizational factors – environmental factors – structure – policies
Weinert (2022)	Data security – employee skills – risk-taking – technological complexity – trust – IT infrastructure
Abdallah (2025)	Management support – information quality – employee acceptance – differences between public and private sectors – financial resources
Khanfar (2025)	System capability – human factors – competitive pressure – institutional environment – government support – technological complexity
Ismail (2022)	Organizational innovation – performance – technology adoption – digital competence
Kurup (2022)	Data quality – infrastructure – cultural readiness – innovation capacity – transparency
Rane (2024)	Ethical challenges – data quality – skills – attitude – technical barriers – organizational support
Radhakrishnan (2022)	Digital maturity – leadership – decision-making – flexible structure
Alsheibani (2019)	Uncertainty – cost – employee resistance – absence of standards – technical challenges
Phuoc (2022)	Relative advantage – compatibility – government support – willingness to innovate – technology quality
Phakamach (2025)	Strategic vision – financial resources – skills – innovation – managerial policies
Dorhetso (2023)	Transparency – government support – technological readiness – organizational structure

Iwuanyanwu (2021)	Competitiveness – technology adoption – organizational impact – competitive advantage
Usmani (2023)	System integration – employee skills – data – technological readiness – supply chain structure
Ronaghi (2023)	Sustainability – innovation – efficiency – environmental effects – data-driven orientation
Ali (2020)	Opportunities – ethical challenges – security – human factors – technical factors
Infante-Moro (2021)	Customer trust – interaction quality – employee skills – security – system quality
Ye (2019)	Trust – data security – perceived usefulness – attitude – psychological factors
Badghish (2024)	TOE factors – competitive pressure – technological readiness – sustainability
Chen (2021)	Infrastructure quality – skills – digital readiness – usability – security
Pumplun (2019)	Organizational readiness – culture – structure – human capital
Hamm (2021)	Human factors – technical factors – organizational factors
Le Tan (2022)	Technology – skills – employee readiness – data quality
Chipriyanova (2024)	Employee attitude – job fear – psychological readiness – digital experience
Devi (2025)	AI strategy – financial resources – structure – leadership
Chen (2019)	Infrastructure – culture – skills – security
Mollaei (2024)	Employee resistance – data weakness – skills – policies and regulations
Merhi & Harfouche (2024)	Management support – technology integration – resources – operational policies
Patnaik (2024)	Relative advantage – innovativeness – compatibility – complexity
Vasiljeva (2021)	Public attitude – awareness – technology adoption
Moghayedi (2026)	Ethical barriers – absence of standards – environmental advantage – risk
Emon (2024)	Attitude – intention to use – experience – social factors
Gruenbichler (2023)	Lack of data – resistance – cost – infrastructure challenges
Assaf (2024)	Transparency – attitude – managerial participation – training
Schaefer (2021)	System capability – organizational support – urban policies
Tursunbayeva (2024)	TOP factors (technology–organization–people) – digital leadership checklist
Khanijahani (2022)	Professional characteristics – organizational characteristics – patient characteristics – health-related factors
Rudko (2021)	Organizational structure – organizational response – flexibility
Hameed (2023)	Training – experience – resources – security
Rahman (2026)	Productivity – efficiency – organizational effects
Asghari (2020)	Competitive intelligence – informational factors – structure – analytical capabilities

At this stage, the initial concepts and indicators extracted from the selected studies were aggregated into subcategories based on semantic similarity, conceptual overlap, and thematic proximity. The purpose of this stage was to organize the large volume of initial codes into more systematic conceptual clusters so that the main dimensions and categories could be identified in the next stage. The following table presents the most important extracted subcategories along with the related initial concepts and supporting sources.

Table 3. Subcategories Extracted from the Initial Concepts

Subcategory	Related Indicators and Concepts	Sources
Technological readiness	IT infrastructure, system integration, processing capability	Merhi (2023), Chen (2021), Kurup and Gupta (2022), Weinert (2022)
Data quality and governance	Data quality, accessibility, data cleansing, data standards	Rane (2024), Merhi (2023), Usmani (2023), Gruenbichler (2023)
Security and privacy	Information security, data protection, cyber risk	Ye (2019), Weinert (2022), Ali (2020), Hameed (2023)
Human skills and competence	Digital skills, AI expertise, data literacy	Ambati (2020), Hameed (2023), Weinert (2022), Assaf (2024)
Employee attitude and acceptance	Positive attitude, trust in AI, intention to use	Ambati (2020), Emon (2024), Vasiljeva (2021)
Resistance and job-related fear	Employee resistance, fear of job replacement	Chipriyanova (2024), Alsheibani (2019), Mollaei (2024)
Organizational culture	Innovation culture, organizational learning, acceptance of change	Pumplun (2019), Khalifa (2023), Dorhetso (2023)
Senior management support	Managerial commitment, digital leadership, resource allocation	Phakamach (2025), Merhi and Harfouche (2024), Devi (2025)
Financial resources	Budget, implementation cost, investment	Abdallah (2025), Phakamach (2025), Gruenbichler (2023)
Strategy and vision	AI strategy, strategic alignment, digital maturity	Radhakrishnan (2022), Devi (2025), Patnaik (2024)
Environmental and institutional factors	Regulations, government support, competitive pressure	Khalifa (2023), Phuoc (2022), Khanfar (2025)
Ethical and legal considerations	AI ethics, transparency, accountability	Moghayedi (2026), Rane (2024), Ali (2020)

Table 4. Main Dimensions and Categories

Dimension	Main Category	Related Subcategories	Sample Sources
Technological	Infrastructure and technology	Technological readiness, system integration	Merhi (2023), Chen (2021), Kurup (2022)
Technological	Data and security	Data quality, security, privacy	Rane (2024), Weinert (2022), Ye (2019)
Human	Human competence	Skills, training, digital experience	Ambati (2020), Hameed (2023)
Human	Attitude and behavior	Acceptance, trust, resistance	Chipriyanova (2024), Emon (2024)
Organizational	Structure and culture	Organizational culture, change management	Pumplun (2019), Dorhetso (2023)
Organizational	Leadership and resources	Management support, financial resources	Phakamach (2025), Abdallah (2025)
Strategic	Strategic orientation	AI strategy, strategic alignment	Devi (2025), Radhakrishnan (2022)
Environmental	Institutional context	Regulations, government support, competition	Khanfar (2025), Phuoc (2022)
Ethical-social	Responsibility	AI ethics, transparency	Moghayedi (2026), Ali (2020)

Table 5. Factors Affecting the Implementation of Artificial Intelligence in Organizations

Final Dimension	Main Categories	Role in AI Implementation	Key Sources
Technological	Infrastructure, data, security	Providing a stable and reliable technical foundation	Merhi (2023), Chen (2021), Rane (2024)
Human	Skills, attitude, acceptance	Ensuring effective use and reducing resistance	Ambati (2020), Chipriyanova (2024)
Organizational	Culture, structure, leadership	Creating internal readiness and managing change	Pumplun (2019), Phakamach (2025)
Strategic	Vision and alignment	Providing macro-level direction and linking AI with organizational goals	Devi (2025), Patnaik (2024)
Environmental	Regulations and competition	Legitimizing and facilitating adoption	Khanfar (2025), Phuoc (2022)
Ethical-social	Ethics and transparency	Increasing trust and social acceptance	Moghayedi (2026), Ali (2020)

4. Discussion and Conclusion

The findings of the present meta-synthesis demonstrated that the implementation of artificial intelligence (AI) in organizations is influenced by a multidimensional set of factors that can be classified into six major dimensions: technological, human, organizational, strategic, environmental, and ethical-social. The results indicate that successful AI implementation is not merely dependent on access to advanced technologies; rather, it requires simultaneous readiness in infrastructure, organizational capabilities, managerial support, human competence, strategic alignment, and institutional legitimacy. The integration of findings from 44 selected studies revealed a relatively coherent pattern across different industries and organizational contexts, suggesting that despite differences in organizational size, sector, and technological maturity, many of the underlying determinants of AI implementation are similar. This finding is consistent with studies emphasizing that AI implementation should be viewed as a socio-technical transformation process rather than a purely technological initiative [10-12]. The identified dimensions also align with the broader literature on digital transformation and technology adoption, which emphasizes the interaction between technical capability, organizational readiness, and environmental support in shaping innovation outcomes [17, 41].

One of the most important findings of this study relates to the central role of technological factors in AI implementation. The meta-synthesis showed that technological readiness, data quality, system integration, information security, and digital infrastructure were among the most frequently repeated factors across the selected studies. This finding suggests that organizations cannot effectively deploy AI without establishing a reliable technical foundation capable of supporting advanced analytics, machine learning processes, and intelligent decision-making systems. High-quality data emerged as one of the most critical success factors because AI systems depend heavily on accurate, integrated, accessible, and standardized data for learning and prediction. Weak data governance, fragmented databases, and poor infrastructure can reduce system reliability and undermine organizational trust in AI outputs. These findings are highly consistent with previous studies emphasizing the significance of data quality, technological capability, and infrastructure readiness in AI adoption and implementation [5, 10, 13, 14]. Moreover, the results support the argument that technological complexity can act as both an enabler and a barrier. While advanced systems create opportunities for

innovation and automation, they also increase implementation challenges related to integration, interoperability, cybersecurity, and operational uncertainty [19, 20]. This indicates that organizations need to develop not only technological assets but also technological governance capabilities to manage AI-related risks effectively.

The human dimension was another major finding of the present study. The results showed that employee skills, digital literacy, trust in AI, positive attitudes, psychological readiness, and resistance to change significantly influence AI implementation outcomes. This finding confirms that AI adoption is fundamentally dependent on human acceptance and organizational learning processes. Employees may resist AI technologies if they perceive them as threats to job security, professional autonomy, or organizational identity. Fear of job replacement, uncertainty regarding new responsibilities, and lack of confidence in AI systems can reduce willingness to adopt intelligent technologies. Conversely, organizations that invest in employee training, awareness, participation, and digital competence development are more likely to achieve successful implementation. These findings are supported by studies highlighting the importance of human competence, attitudes, and trust in AI acceptance [21-23, 26]. The results also align with studies conducted in healthcare and public-sector contexts, where user confidence, professional experience, and training have been identified as key determinants of AI adoption [25, 33]. Therefore, the findings suggest that organizations should treat AI implementation as a change management process that requires continuous communication, education, participation, and support mechanisms for employees.

The findings further demonstrated the importance of organizational factors, particularly organizational culture, structure, leadership, and resource availability. Organizations characterized by flexible structures, innovation-oriented cultures, collaborative environments, and strong managerial support appeared more capable of implementing AI successfully. In contrast, organizations with rigid hierarchies, fragmented communication systems, or weak leadership commitment often faced greater implementation difficulties. This finding supports the argument that organizational readiness extends beyond technological preparedness and includes cultural and managerial dimensions. Leadership was identified as particularly influential because AI implementation often requires long-term investment, strategic decision-making, resource allocation, and organizational coordination. Senior management support helps reduce uncertainty, mobilize resources, establish priorities, and legitimize organizational transformation initiatives. These findings are consistent with studies emphasizing the role of organizational readiness, digital leadership, and managerial commitment in AI implementation [8, 28-30]. Furthermore, the repeated emphasis on organizational culture suggests that AI implementation depends significantly on the ability of organizations to promote experimentation, learning, innovation, and adaptability. This finding is also consistent with studies that identified organizational learning and change acceptance as essential prerequisites for AI adoption [32, 37].

Another important finding concerns the strategic dimension of AI implementation. The meta-synthesis showed that organizations with clear digital visions, AI strategies, and strategic alignment were more likely to implement AI effectively and derive value from it. This finding indicates that AI implementation should not be approached as an isolated technological experiment but rather as an integrated strategic initiative connected to organizational goals, competitive priorities, and digital transformation agendas. Organizations that lack strategic clarity may invest in AI technologies without understanding how they contribute to operational efficiency, innovation, or organizational competitiveness. The findings therefore reinforce the importance of aligning AI initiatives with business objectives, governance structures, and innovation strategies. These results are strongly aligned with previous research emphasizing strategic orientation, digital maturity, and innovation readiness as critical enablers of AI implementation [31, 35, 36]. In higher education and public-sector settings, strategic leadership and policy alignment were also found to play significant roles in AI integration processes [8, 34]. Consequently, the findings suggest that organizations need comprehensive AI roadmaps that integrate technological, organizational, and human dimensions within a broader strategic framework.

The environmental dimension also emerged as a major category influencing AI implementation. Competitive pressure, government support, institutional regulations, industrial conditions, and environmental legitimacy were identified as significant external drivers affecting organizational decisions regarding AI adoption. Organizations operating in highly competitive environments may adopt AI to improve productivity, efficiency, service quality, and innovation performance. At the same time,

institutional support and regulatory clarity can reduce uncertainty and encourage investment in AI systems. Conversely, weak legal frameworks, regulatory ambiguity, or insufficient governmental support may inhibit implementation. These findings align with the Technology–Organization–Environment perspective, which emphasizes that external environmental conditions strongly shape organizational technology adoption behavior [17, 37]. The findings are also consistent with systematic reviews demonstrating that environmental and institutional factors remain among the most influential determinants of AI implementation across industries and sectors [11]. In addition, studies focusing on municipalities, healthcare systems, and supply chains have similarly highlighted the influence of institutional legitimacy, stakeholder expectations, and industrial dynamics on AI adoption decisions [6, 20, 34]. These results indicate that organizations do not implement AI independently from their external environments, but rather within institutional ecosystems that shape opportunities, constraints, and adoption incentives.

The ethical-social dimension represented another important outcome of the present study. Ethical concerns related to transparency, accountability, fairness, privacy, and responsible AI use were repeatedly identified across the analyzed studies. This finding reflects the growing recognition that AI systems influence not only organizational efficiency but also social trust, stakeholder legitimacy, and ethical responsibility. Organizations may face resistance from employees, customers, regulators, and society if AI systems are perceived as biased, opaque, intrusive, or unfair. Concerns regarding privacy violations, algorithmic discrimination, lack of transparency, and ethical uncertainty may undermine trust in AI technologies and reduce adoption willingness. These findings support prior research emphasizing the importance of ethical governance and responsible AI implementation [13, 39, 40]. Moreover, the findings are consistent with studies arguing that ethical considerations are no longer peripheral concerns but have become central components of digital transformation strategies [41]. This suggests that organizations must integrate ethical principles, transparency mechanisms, and accountability frameworks into AI governance structures to ensure sustainable implementation and social acceptance.

Overall, the present study contributes to the existing literature by integrating fragmented findings from different industries, theoretical frameworks, and methodological approaches into a comprehensive conceptual classification. Unlike studies focusing on isolated dimensions of AI adoption, this meta-synthesis demonstrates that AI implementation is shaped by the interaction of multiple interdependent factors. Technological readiness alone is insufficient without human acceptance, organizational support, strategic alignment, institutional legitimacy, and ethical responsibility. Similarly, organizational readiness cannot compensate for weak infrastructure or poor data quality. The findings therefore highlight the systemic nature of AI implementation and reinforce the argument that successful AI adoption requires a holistic organizational transformation approach. In this regard, the present study provides both theoretical and practical implications by offering a multidimensional framework that can guide future research, organizational diagnostics, and AI implementation strategies across various sectors [1, 9, 16, 43].

One limitation of the present study is that the meta-synthesis relied exclusively on published scientific studies, which may have resulted in the exclusion of unpublished organizational reports, industry documents, and practical implementation experiences. In addition, although the selected studies covered different industries and countries, variations in organizational culture, technological maturity, and institutional environments may limit the generalizability of the findings to all organizational contexts. Another limitation relates to the diversity of research methods and conceptual frameworks used in the analyzed studies, which may have created differences in terminology and interpretation during the coding and classification process.

Future research can extend the findings of the present study by empirically testing the identified dimensions and categories in specific industries or organizational settings. Comparative studies between developed and developing countries, public and private organizations, or small and large enterprises could provide deeper insights into contextual differences in AI implementation. Future studies may also investigate the causal relationships among technological, human, organizational, strategic, and ethical factors using quantitative modeling approaches. Furthermore, longitudinal studies examining how AI implementation evolves over time would contribute significantly to understanding organizational adaptation and digital transformation processes.

From a practical perspective, organizations seeking to implement AI successfully should adopt a holistic approach that simultaneously addresses technological infrastructure, human capability development, organizational readiness, strategic alignment, and ethical governance. Managers

should invest in employee training, strengthen data governance systems, encourage innovation-oriented cultures, and establish transparent AI policies to reduce resistance and increase trust. Organizations should also align AI initiatives with long-term strategic objectives and develop clear governance mechanisms for managing ethical and operational risks. In addition, policymakers and governmental institutions can facilitate AI implementation by providing supportive regulations, digital infrastructure development, and institutional guidance for responsible AI adoption.

Authors' Contributions

Authors equally contributed to this article.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

All procedures performed in this study were under the ethical standards.

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