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Developing a Model for the Evolution of Strategic Management in Organizations with Emphasis on the Role of Information Systems and Information Management: A Qualitative Grounded Theory Study

ABSTRACT

The present study aimed to develop a model for the evolution of strategic management in organizations, with emphasis on the role of information systems and information management. In terms of purpose, the study was applied, and in terms of its nature, it predominantly adopted a qualitative approach. Using grounded theory based on the Strauss and Corbin approach and conducting semi-structured interviews with experts in strategic management, information technology, and digital transformation in organizations located in Baghdad, purposive sampling was continued until theoretical saturation was reached, after which the conceptual model of the study was extracted. Based on the findings obtained from the coding procedures, the causal conditions comprised “organizational data infrastructure and information management,” “digital transformation and the transformation of strategic management,” and “leadership and the role of information technology in strategy.” The contextual conditions consisted of “data governance and information quality,” “data-driven culture and human resource empowerment,” and “information integration and organizational coordination.” The intervening conditions included “information technology challenges and barriers” and “organizational resistance to digital transformation.” Meanwhile, the core category of the study was identified as “the evolution of strategic management in organizations based on data-driven orientation and intelligentization.” Action strategies were extracted along three dimensions: “data analytics and artificial intelligence in strategy support,” “data-driven market analysis and customer understanding,” and “strategic agility and dynamism in the digital environment.” Ultimately, the final outcome of the model was identified as “data-driven innovation and competitive advantage.” The results indicated that establishing data infrastructures, strengthening information technology-based leadership, and developing a data-driven culture play decisive roles in the evolution of organizational strategic management. Furthermore, the use of data analytics and artificial intelligence and the enhancement of strategic agility can facilitate innovation and the achievement of sustainable competitive advantage in organizations.

Keywords: strategic management, information systems, information management, grounded theory

Introduction

Strategic management has traditionally been concerned with the formulation, implementation, evaluation, and renewal of organizational strategies in response to internal capabilities and external environmental conditions. However, the growing complexity of contemporary organizations, the acceleration of technological change, the proliferation of digital data, and the increasing volatility of competitive environments have substantially altered the foundations upon which strategic decisions

are made. In such settings, the effectiveness of strategic management increasingly depends on the organization's ability to acquire, process, integrate, interpret, and exploit information in a timely and reliable manner. Information systems and information management have therefore moved from a predominantly operational or supportive role toward a more strategic position in organizational governance and decision-making. Contemporary information systems are not merely repositories of transactional data but constitute interconnected socio-technical infrastructures that connect technologies, organizational processes, knowledge flows, managerial practices, and decision structures [1]. This transformation has increased the relevance of information quality, information accessibility, systems integration, analytical capability, and digital infrastructure to strategic management, particularly in organizations facing dynamic and uncertain environments [2, 3].

The evolution of strategic management in the digital era is closely linked to the increasing interdependence between strategy and information technology. Organizations increasingly rely on enterprise information systems, management information systems, business intelligence platforms, data analytics, and digitally enabled decision-support mechanisms to formulate strategic priorities and monitor their implementation. Information systems enable managers to access timely and structured information, identify performance deviations, compare alternative scenarios, and coordinate decisions across organizational units. Evidence suggests that management information systems can improve the quality, speed, and consistency of managerial decision-making in large-scale organizations by supporting information processing and reducing uncertainty [4]. Likewise, strategic use of information systems can strengthen decision-making and organizational performance by providing managers with integrated information, analytical tools, and improved visibility over organizational activities [5]. From this perspective, information management represents a fundamental organizational capability because the strategic value of technology depends not only on technological infrastructure but also on the organization's capacity to govern, organize, interpret, share, and apply information effectively.

The strategic role of information systems becomes particularly evident when viewed through the concept of digital strategizing. Digital technologies have altered both the content of strategy and the process through which strategies are developed, revised, and enacted. Digital strategizing involves a continuous interaction between strategic choices and digital resources rather than a sequential process in which technology simply follows a previously formulated strategy [6]. Enterprise information systems can facilitate strategy-making by enabling access to distributed organizational knowledge, supporting cross-functional interaction, and strengthening organizational innovativeness [7]. Furthermore, information systems-enabled strategy-making has been associated with dynamic and improvisational capabilities that can contribute to improved corporate performance [8]. More recent evidence also indicates that enterprise information systems strategies can influence organizational agility through the development of IT-enabled dynamic capabilities, emphasizing the importance of integrating technological resources with strategic managerial processes [9]. These developments suggest that the evolution of strategic management should be understood as a process in which strategic thinking becomes increasingly data-driven, digitally enabled, adaptive, and integrated with information systems.

Organizational agility is one of the major strategic outcomes associated with effective use of information technology. In turbulent environments, organizations need to sense changes rapidly, interpret emerging information, reconfigure resources, and respond before opportunities disappear or threats intensify. The information systems literature has consistently emphasized the relationship between information technology and organizational agility, showing that technological capabilities can facilitate responsiveness when they are aligned with organizational structures, processes, and strategic needs

[10]. IT capabilities can also enhance operational agility by improving information processing, coordination, and process responsiveness [11]. Similarly, IT alignment, cloud computing, and knowledge transfer can contribute to organizational agility by improving the flexibility and interconnectedness of organizational activities [12]. IT architecture flexibility and decentralized IT governance can further promote IT-enabled dynamic capabilities and competitive performance, although these relationships may depend on environmental characteristics [13]. Accordingly, the strategic value of information systems extends beyond operational efficiency to encompass adaptability, responsiveness, and the dynamic reconfiguration of organizational capabilities.

The integration of information systems across organizational functions is also a central condition for strategic effectiveness. Fragmented systems and isolated databases can restrict the flow of information, create inconsistencies, and reduce managerial visibility, whereas integrated information systems can improve coordination and support more coherent strategic decision-making. Research on supply chain integration demonstrates that information technology can strengthen internal and external integration and subsequently enhance organizational performance [14]. Integrated management accounting information systems similarly support strategic management accounting and can improve organizational efficiency by connecting financial, operational, and managerial information [15]. More broadly, integrated digital technologies can strengthen accounting and analytical support for strategic management by improving information availability, consistency, and analytical capacity [16]. These findings reinforce the view that information integration is not simply a technical issue but a strategic capability that can influence planning, control, coordination, and organizational learning.

The emergence of big data analytics has further transformed the informational foundations of strategic management. Traditional management information systems were primarily designed to process structured internal information, whereas contemporary organizations increasingly operate with large, heterogeneous, rapidly generated, and externally sourced datasets. Big data analytics allows organizations to detect patterns, identify relationships, forecast trends, and generate insights that may not be visible through conventional reporting systems. Bibliometric evidence indicates that big data analytics has become increasingly important in information management because of its capacity to improve operational efficiency and managerial decision-making [17]. Big data capabilities can also contribute to performance by supporting organizational ambidexterity, particularly under conditions of environmental dynamism [18]. Furthermore, the use of big data can promote organizational innovation when aligned with business strategy and supported by information sharing mechanisms [19]. Thus, the strategic use of data increasingly depends on an organization's capacity to move beyond descriptive reporting toward predictive and prescriptive forms of analysis.

Artificial intelligence represents a further stage in the evolution of information-supported strategic management. AI technologies are increasingly incorporated into strategic analysis, forecasting, scenario development, decision support, customer analysis, risk monitoring, and performance optimization. A recent systematic review of technology trends in strategic management indicates that artificial intelligence is becoming increasingly relevant to strategic decision-making through automation, advanced analytics, predictive modeling, and intelligent decision-support systems [20]. AI-driven management information systems can also support predictive monitoring and enable organizations to respond proactively to complex risks and changing environmental conditions [21]. The growing integration of artificial intelligence into strategic management reflects a broader transition from information availability toward intelligent interpretation and automated

analytical support. Nevertheless, the strategic benefits of AI depend on data quality, governance, managerial capabilities, organizational readiness, and the ability to combine algorithmic outputs with managerial judgment.

The role of digital platforms and advanced technological infrastructures also illustrates how information capabilities can influence strategic innovation. Digital platform capabilities can contribute to technological innovation by facilitating information exchange, resource recombination, and strategic knowledge integration [22]. Information technology can likewise support open innovation by enabling organizations to orchestrate resources across organizational boundaries, connect internal and external knowledge, and coordinate innovation activities more effectively [23]. These developments are particularly important because strategic management increasingly requires organizations to operate within ecosystems rather than as isolated entities. Digital connectivity allows firms to access partners, customers, suppliers, and external knowledge sources in real time, but it also increases the need for strategic coordination, data governance, and information security. Therefore, technological innovation and strategic management are becoming progressively intertwined through information infrastructures that support resource orchestration, learning, and organizational adaptation.

Information management also contributes to organizational resilience, especially in environments characterized by disruption, uncertainty, and rapid change. Effective information management can improve organizational resilience by supporting situational awareness, facilitating communication, preserving organizational knowledge, and enabling timely strategic responses to unexpected events [24]. In this respect, information management is not limited to storing organizational data but includes the systematic processes through which information is generated, validated, shared, protected, and converted into actionable knowledge. Digital technology-based strategic management can similarly improve organizational adaptability and institutional performance by aligning technological tools with planning and management processes [25]. These observations suggest that information systems and strategic management should be examined as mutually reinforcing dimensions of organizational development rather than as separate functional domains.

At the same time, the growing dependence on digital information creates significant strategic challenges. Information systems may generate value only when organizations address problems related to data quality, information fragmentation, technological incompatibility, inadequate skills, implementation costs, cybersecurity, and organizational resistance. Cybersecurity has become an increasingly strategic concern because digital transformation expands both the value and vulnerability of organizational information assets. Cybersecurity risk management therefore needs to be integrated into strategic management rather than treated exclusively as a technical function [26]. The security and reliability of information systems are particularly important when strategic decisions depend on data that must be accurate, protected, and available when needed [27]. Advanced information infrastructures also require appropriate governance mechanisms to maintain trust, traceability, and reliability. For example, blockchain-enabled information management systems demonstrate how emerging technologies can support more transparent, integrated, and secure information management in complex organizational environments [28].

Human and organizational factors are equally critical in determining whether information systems contribute to strategic evolution. Digital transformation is not solely a technological process; it also requires changes in managerial cognition, employee competencies, organizational structures, knowledge-sharing practices, and decision-making cultures. Research indicates that proactive IT/IS capabilities and knowledge transfer can facilitate enterprise digital business transformation by linking technological resources with organizational knowledge and learning [29]. Strategic information management

therefore requires not only investments in systems but also the development of human capabilities that enable employees and managers to interpret and use information effectively. A data-driven organizational culture can encourage evidence-based decision-making, reduce excessive reliance on intuition, strengthen information sharing, and support continuous learning. Conversely, cultural and managerial resistance can delay the adoption of digital technologies and limit their strategic value. The strategic evolution of organizations thus depends on the interaction among technological infrastructure, leadership, human capital, organizational culture, and governance arrangements.

The increasing complexity of strategic management also highlights the need to examine information systems within different organizational and institutional contexts. Strategic management factors do not operate uniformly across organizations because environmental uncertainty, organizational structure, sectoral characteristics, institutional constraints, and stakeholder configurations can influence how strategy is formulated and implemented [30]. This contextual perspective is especially important in settings where digital transformation is occurring under infrastructural, institutional, or managerial constraints. Organizations may possess access to digital technologies but differ considerably in their ability to integrate them into strategic processes. Consequently, examining the evolution of strategic management requires attention not only to technological capabilities but also to causal, contextual, and intervening conditions that shape how information systems are adopted, interpreted, and utilized.

The literature further indicates that effective strategic information management can improve organizational performance by strengthening the connection between information resources and managerial action. Strategic information management involves ensuring that relevant information reaches appropriate decision-makers in a usable form and at the appropriate time, thereby enabling organizations to improve planning, resource allocation, coordination, and control [3]. Nevertheless, persistent problems in information support for strategic management include insufficient data integration, weak analytical mechanisms, inconsistent information flows, and inadequate alignment between information systems and managerial requirements [2]. Such problems can restrict the strategic benefits of digital transformation even when organizations possess advanced technological resources. This distinction is important because strategic value is not generated automatically by technology; rather, it emerges from the alignment among information systems, organizational capabilities, decision processes, and strategic objectives.

From a methodological perspective, the evolving relationship between information systems and strategic management also requires careful conceptual development grounded in organizational practice. Information systems research increasingly emphasizes the importance of rigorous theoretical reasoning and reliable knowledge accumulation, including appropriate use of prior research and citation practices [31]. Existing studies have provided important evidence regarding IT capabilities, analytics, digital transformation, innovation, agility, information integration, and organizational performance, yet much of this research has investigated specific relationships using predefined theoretical models. Although such studies provide valuable explanatory insights, they may not fully capture how managers and experts understand the interconnected processes through which strategic management evolves in a particular organizational context. A grounded theory approach can address this limitation by allowing concepts, categories, conditions, strategies, and consequences to emerge systematically from participants' experiences rather than imposing a predetermined framework.

This need is particularly relevant for organizations operating in Baghdad, where the interaction among strategic management, information systems, information management, digital transformation, and organizational capabilities may

reflect distinctive institutional and organizational conditions. International evidence confirms the growing strategic relevance of information systems, data analytics, AI, integrated technologies, dynamic capabilities, innovation, agility, and resilience, yet the mechanisms through which these factors combine into an evolutionary model of strategic management remain insufficiently understood within the organizational context of Baghdad [5, 9, 16]. Developing a context-sensitive model can therefore help clarify how data infrastructure, digital transformation, IT leadership, data governance, human resource empowerment, information integration, technological barriers, organizational resistance, analytics, artificial intelligence, market intelligence, and strategic agility interact in shaping strategic management. Such a model can also provide a more comprehensive explanation of how information systems contribute not merely to operational efficiency but to innovation and sustained competitive advantage.

Accordingly, the aim of this study is to develop a grounded theory model of the evolution of strategic management in organizations in Baghdad, with emphasis on the role of information systems and information management.

Methodology

The present study is applied in terms of purpose and qualitative with an exploratory approach in terms of nature. It was designed to achieve an in-depth understanding of and develop a context-specific model for the evolution of strategic management based on information systems in organizations located in Baghdad. The qualitative method was selected because of the complexity and multidimensionality of the research topic, the need for an in-depth understanding of experts' experiences, attitudes, and perceptions, and the absence of a well-established and context-specific theoretical framework in the field under investigation. In this study, grounded theory based on the systematic approach of Strauss and Corbin was employed. The rationale for selecting this approach was that the evolution of strategic management based on information systems has a limited established and context-specific theoretical framework within the setting under investigation, namely organizations in Baghdad. Accordingly, concepts and relationships needed to be derived from the empirical data obtained from experts. Through the stages of open, axial, and selective coding, the Strauss and Corbin approach enables the identification of categories, explanation of relationships among them, and development of a coherent conceptual model.

The study population consisted of 15 senior managers, information technology managers, strategy managers, and senior consultants from large and medium-sized organizations located in Baghdad, Iraq, who possessed practical experience and expertise in the implementation or management of information systems and strategic processes. To ensure the scientific and professional qualifications of the participants, specific expert selection criteria were established. Accordingly, the selected individuals were required to have at least 5 to 10 years of managerial or executive experience in information technology or strategic management, direct experience in implementing information systems, executing digital transformation projects, or formulating and implementing organizational strategic plans, and a decision-making or decision-influencing role within their organizations. Theoretical purposive sampling was employed and continued until theoretical saturation was achieved, such that subsequent interviews no longer generated new concepts or categories. Qualitative data were collected through in-depth semi-structured interviews. By establishing rapport and gaining the trust of interviewees while observing ethical considerations, the researcher collected data through audio recording and note-taking.

The qualitative data analysis process was conducted through three stages: open, axial, and selective coding. During open coding, the data were broken down into discrete segments, initial concepts were extracted, and categories were identified.

During axial coding, one of the categories was selected as the core category (central phenomenon), and the relationships between the other categories and the core category were explained within the coding paradigm, including causal conditions, contextual conditions, intervening conditions, strategies and actions, and consequences. The core category was accompanied by the central question: What do the data indicate? During selective coding, the categories were integrated, the final model was designed, and the coding paradigm was developed to represent the relationships among the central phenomenon, causal conditions, strategies and actions, contextual conditions, intervening conditions, and consequences.

To establish the credibility of the qualitative findings, construct validity was enhanced through triangulation of interview questions, negative case analysis, and methodological flexibility involving review of the interview content and process. Internal validity was ensured through attainment of theoretical saturation, refinement of the model to its most parsimonious form, and comparison with the existing literature. External validity, or transferability, was facilitated by selecting experts from diverse backgrounds and providing comprehensive information regarding the research setting and conditions. Ultimately, the selected qualitative method, through the application of grounded theory, enabled the study to develop a context-specific theoretical model of the evolution of strategic management based on information systems by obtaining an in-depth understanding of and exploring experts' experiences. This approach demonstrated the strongest alignment with the overall objective of the study and provided the capacity to address the research questions at both descriptive and explanatory levels.

During the axial coding stage of grounded theory, the researcher selects one of the categories derived from open coding as the central phenomenon. This phenomenon constitutes the focal point of the research process, repeatedly emerges from the data, and is capable of explaining the principal issue and its transformations. The phenomenon is positioned at the center of the paradigmatic model, around which the other categories are organized. Causal conditions refer to events and factors that influence the central phenomenon and contribute to its emergence. Contextual conditions are the circumstances within which strategies and actions are undertaken to manage the central phenomenon. Intervening conditions are broader and more general factors, such as culture and environmental climate, that facilitate or constrain strategies. Strategies and actions refer to specific actions and interactions arising from the central phenomenon that contribute to implementing the model process. Finally, consequences are the tangible and intangible outcomes resulting from the implementation of strategies. This stage concludes with the development of the coding paradigm, which depicts the relationships among the six paradigmatic components, with the corresponding indicators incorporated into the grounded theory paradigmatic model (Strauss & Corbin, 1998).

Findings and Results

The demographic characteristics of the experts participating in the interviews are presented according to gender, marital status, educational level, and work experience.

Table 1

Descriptive Findings

Expert	Gender	Age	Education	Occupation	Marital Status	Work Experience (Years)
1	Male	54	PhD in Strategic Management	Director of Strategic Planning and Organizational Development	Married	25
2	Male	46	Master's Degree in Information Technology	Chief Information Officer (CIO)	Married	18
3	Male	48	PhD in Information Technology Management	Senior Consultant for Digital Transformation and Information Systems	Married	22

4	Male	56	PhD in Business Administration	Deputy Director for Planning, Programs, and Strategic Development	Married	28
5	Male	39	Master's Degree in Software Engineering	Database Manager and Senior Systems Analyst	Married	15
6	Female	44	PhD in Strategic Management	University Professor and Strategy Consultant to Government Organizations	Married	20
7	Male	42	Master's Degree in Information Technology Management	Management Information Systems (MIS) Project Manager	Married	16
8	Male	49	PhD in Computer Engineering	Head of Information Security and Communications Infrastructure Department	Married	23
9	Male	38	Master's Degree in Industrial Management	Senior Organizational Process and Systems Analyst	Married	14
10	Male	53	PhD in Public Administration	Director General of Administrative Transformation and Information Technology	Married	27
11	Male	34	Master's Degree in Network Engineering	Senior Network Security and Cloud Systems Specialist	Single	10
12	Female	41	PhD in Information Technology Engineering	Head of Intelligentization and Data Governance Group	Married	19
13	Male	59	PhD in Strategic Management	Senior Advisor and Chair of the Information Technology Steering Council	Married	30
14	Male	52	Master's Degree in Business Administration	Chief Executive Officer (CEO) and Business Development Executive	Married	25
15	Male	37	Master's Degree in Information Technology	Manager of Organizational Portal and Integrated Enterprise Systems (ERP)	Married	14

The table above presents the demographic characteristics of the experts who participated in the qualitative interviews. It shows the demographic characteristics of the 15 experts selected for the study entitled “Evolution of Strategic Management through Information Systems in Organizations in Baghdad.” The composition of the experts included 10 men and 5 women, predominantly ranging in age from 34 to 59 years, with an average age of approximately 46 years. In terms of educational attainment, most experts held either doctoral degrees (6 participants) or master's degrees (9 participants) in fields related to strategic management, information technology, and computer engineering, indicating a substantial depth of specialized knowledge. The participants' occupations also covered a broad range of senior managerial and professional positions in organizations in Baghdad, including information technology managers, strategic managers, digital transformation consultants, and senior executives. In addition, the majority of the experts (14 participants) were married, and their work experience ranged from 10 to 30 years, indicating considerable professional experience in their respective fields. This diversity in gender, age, education, occupation, and work experience contributed to the richness of the perspectives expressed during the interviews.

The data obtained through the grounded theory process of Strauss and Corbin (2012) were classified into 76 categories within 13 broader categories and ultimately grouped into six paradigmatic categories. Based on the opinions of professors and subject-matter experts, 13 indicators derived from the qualitative grounded theory analysis of the interviews were used to develop the model for the evolution of strategic management in organizations with emphasis on the role of information systems and information management. Table 2 presents the open, axial, and selective codes corresponding to each of the six major components of the paradigmatic model of strategic management evolution in organizations with emphasis on the role of information systems and information management. As shown, through the systematic coding process of grounded theory, a total of 76 open codes were extracted from the in-depth interviews with experts. During axial coding, these codes were classified into 13 axial codes, and during selective coding, all categories were ultimately organized within six paradigmatic components: causal conditions (3 axial codes and 18 open codes), the central phenomenon (1 axial code and 6 open codes), contextual conditions (3 axial codes and 16 open codes), intervening conditions (2 axial codes and 12 open codes), strategies and actions (3 axial codes and 18 open codes), and consequences (1 axial code and 6 open codes). Accordingly, the highest frequency of open codes was associated with causal conditions and strategies and actions, with 18 codes each, whereas the

lowest frequency was associated with the central phenomenon and consequences, with 6 codes each. This finding reflects the greater conceptual richness of causal and strategic factors compared with the other components. Ultimately, the paradigmatic model of the study was designed and developed around “the evolution of strategic management in organizations based on data-driven orientation and intelligentization” as the central phenomenon, incorporating all 13 extracted axial codes.

Table 2

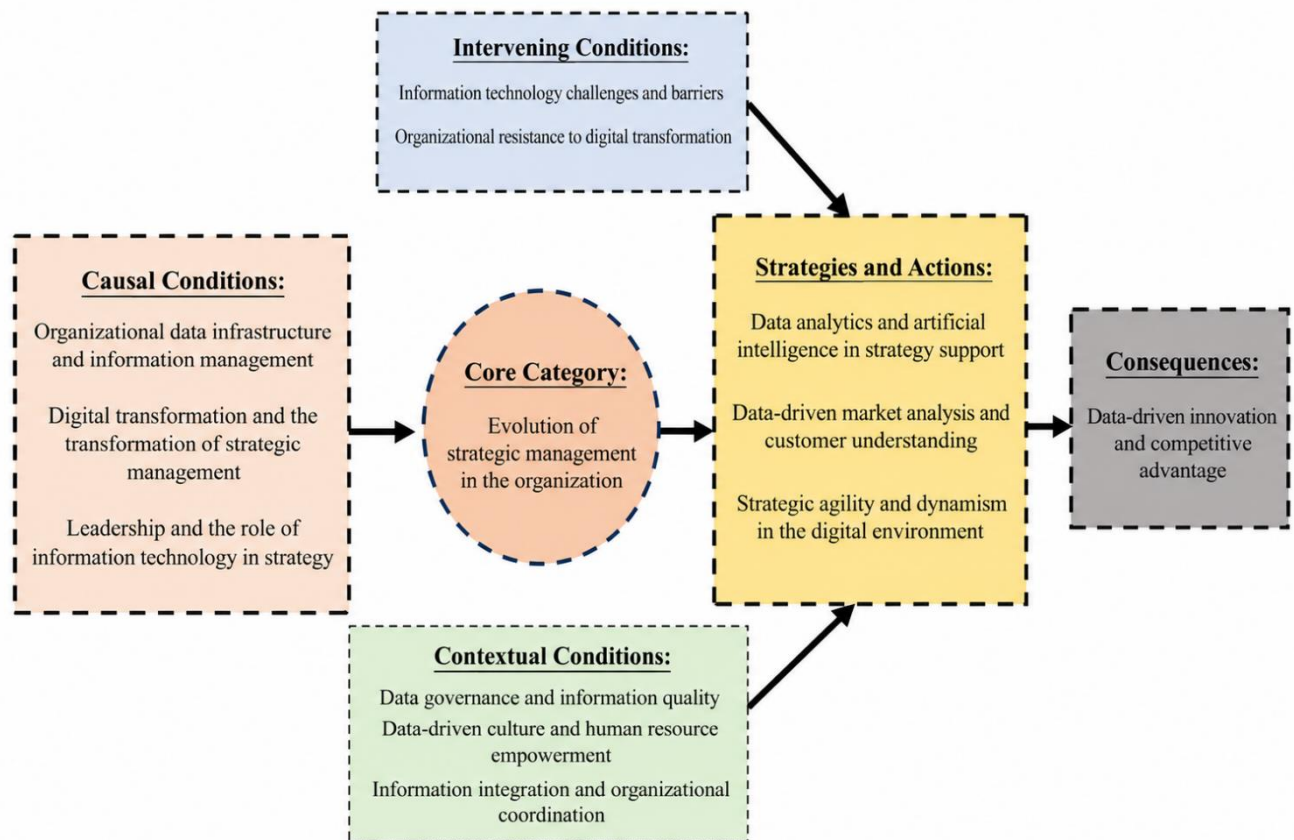
Findings of the Coding Stages

Selective Code	Axial Code	Open Codes
Causal Conditions	Organizational Data Infrastructure and Information Management	Organizational data management and standardization; integration of organizational data and analytics infrastructures; need for data infrastructure for big data analytics; need for integration of data and information databases; integration of information systems; information infrastructure and a data-driven organizational culture
Causal Conditions	Digital Transformation and the Transformation of Strategic Management	Digital transformation and analytics orientation in strategic planning; digitalization of strategic management processes; transformation of business models and managerial mindsets in the digital era; change in the approach to strategy formulation in the new competitive environment; transition of strategic management toward a data-driven approach; convergence of digital technologies in decision support
Causal Conditions	Leadership and the Role of Information Technology in Strategy	Senior management support for data-driven decision-making; strategic role of information technology in organizational planning; role of information systems in the transformation of strategic management; role of emerging technologies in shaping future strategy; role of digital transformation and leadership in organizational competitive advantage; alignment and collaboration between IT and organizational units
Central Phenomenon	Evolution of Strategic Management in the Organization Based on Data-Driven Orientation and Intelligentization	Intelligentization and digitalization of strategic decision-making processes; data-driven strategic decision-making and management dashboards; evidence-based decision-making and interdepartmental collaboration; data-driven and real-time decision-making in strategic management; accelerating and improving the accuracy of strategic decision-making through technology; reducing intuitive decision-making through data analytics
Contextual Conditions	Data Governance and Information Quality	Data governance and utilization of big data in market management; knowledge management and data governance in organizational decision-making; importance of data quality in analysis and forecasting; challenges related to data quality and data fragmentation within organizations; data quality challenges and shortages of analytical skills; necessity of investment in and management of the data life cycle
Contextual Conditions	Data-Driven Culture and Human Resource Empowerment	Importance of human resource empowerment and information sharing; role of training and data governance in developing data-driven decision-making; development of data-driven analytical culture and skills; development of a data-driven organizational culture; digital empowerment and the data-driven future of strategic management; organizational learning based on data and technology
Contextual Conditions	Information Integration and Organizational Coordination	Information integration in strategic processes; integration of information systems; integration of organizational data and analytics infrastructures; alignment and collaboration between IT and organizational units
Intervening Conditions	Information Technology Challenges and Barriers	Challenges related to technological infrastructure and organizational data readiness; shortages of information technology skills and infrastructure; costs of implementing advanced information technologies; challenges of systems integration and transition toward predictive analytics; need for data infrastructure for big data analytics; need for integration of data and information databases
Intervening Conditions	Organizational Resistance to Digital Transformation	Organizational resistance to digital transformation; cultural resistance to data-driven decision-making; managerial resistance to the adoption of information systems; human and security challenges in adopting emerging technologies; risk management and information security in the digital environment; information transparency and communication challenges between IT and business units
Strategies and Actions	Data Analytics and Artificial Intelligence in Strategy Support	Application of advanced data analytics in information management; application of data analytics in strategic decision-making; application of artificial intelligence in scenario development and decision support; application of artificial intelligence and big data in strategic analysis; application of artificial intelligence in managerial analysis and decision-making; advanced and real-time data analytics in strategic scenarios
Strategies and Actions	Data-Driven Market Analysis and Customer Understanding	Analysis of customer behavior and sentiment using advanced data; analysis of market trends and customer behavior; forecasting demand and market trends using artificial intelligence; identifying hidden market patterns through big data analytics; identifying new opportunities through data analysis; analytical capabilities of information systems for market intelligence
Strategies and Actions	Strategic Agility and Dynamism in the Digital Environment	Strategic agility and continuous strategy monitoring in the digital environment; increased speed of change and information analysis in the digital era; dynamism and analytical support in strategy formulation; facilitation of knowledge flows and organizational agility; real-time and rapid access to organizational information; managers' access to dashboards and customer data
Consequences	Data-Driven Innovation and Competitive Advantage	Transforming data into managerial insights and business innovation; creating competitive advantage through data analytics and digital transformation; strengthening data-driven orientation and access to organizational data; linking data analytics with strategic planning; combining data analytics with managerial experience in strategy implementation; improving the quality of strategic planning and forecasting through data

Based on the results obtained from the coding process presented in Table 2 and the grounded theory–based paradigmatic model shown in Figure 1, the paradigmatic model of the evolution of strategic management in organizations with emphasis on the role of information systems and information management is presented in Figure 2.

Figure 1

Paradigmatic Model of the Evolution of Strategic Management in Organizations with Emphasis on the Role of Information Systems and Information Management



Discussion and Conclusion

The present study sought to develop a model for the evolution of strategic management in organizations with emphasis on the role of information systems and information management. The qualitative findings produced a paradigmatic model consisting of causal conditions, the core category, contextual conditions, intervening conditions, strategies and actions, and consequences. The core category was identified as the evolution of strategic management in organizations based on data-driven orientation and intelligentization. This central finding indicates that the contemporary evolution of strategic management is no longer adequately explained through conventional planning, environmental analysis, and managerial judgment alone; rather, it increasingly depends on the systematic use of organizational data, integrated information systems, advanced analytics, and intelligent decision-support mechanisms. This interpretation is consistent with the broader information systems literature, which increasingly conceptualizes information systems as interconnected organizational infrastructures that shape managerial processes, knowledge flows, and strategic action rather than as merely technical tools [1]. It is also aligned with the notion of digital strategizing, in which strategy and digital technology are viewed as mutually constitutive processes that evolve together over time [6]. Accordingly, the findings suggest that strategic management is increasingly becoming an information-intensive and digitally mediated organizational capability.

The first set of findings concerned the causal conditions of the model, namely organizational data infrastructure and information management, digital transformation and the transformation of strategic management, and leadership and the role of information technology in strategy. The identification of organizational data infrastructure and information management as a causal condition demonstrates that the evolution of strategic management depends fundamentally on the availability, standardization, integration, and accessibility of organizational data. Without reliable data infrastructures, strategic analysis remains fragmented and heavily dependent on incomplete or delayed information. This finding is supported by Adamova et al., who emphasized that weaknesses in information support create significant constraints for strategic management [2]. Similarly, Radelytskyy and Hrushytskyi showed that integrated digital technologies and information systems can strengthen the accounting and analytical foundations of strategic management by improving information availability and analytical support [16]. The present findings therefore reinforce the argument that data infrastructure should be regarded as a strategic resource rather than solely as an operational or technological requirement.

The emergence of digital transformation as another causal condition indicates that the development of strategic management is closely tied to changes in business models, decision processes, organizational structures, and managerial mindsets associated with digitalization. In the current study, experts emphasized the transition from conventional strategic planning toward digitally enabled and analytically oriented strategy formulation. This result is consistent with research showing that proactive information technology and information systems capabilities facilitate enterprise digital business transformation through the interaction of technological and knowledge resources [29]. It also aligns with the concept of digital strategizing, which emphasizes that strategy formulation and implementation increasingly unfold through continuous interaction with digital infrastructures [6]. Furthermore, Rahman et al. showed that digital technology-based strategic management can improve institutional management and quality by integrating digital tools into planning and organizational processes [25]. Taken together, these studies support the present finding that digital transformation is not simply a contextual change surrounding strategic management but one of the forces that actively restructures how strategic management itself is performed.

The third causal condition was leadership and the role of information technology in strategy. The findings showed that support from senior management, strategic participation of IT functions, alignment between IT and organizational units, and managerial recognition of emerging technologies all contribute to the evolution of strategic management. This result is particularly important because it emphasizes that technological resources alone are insufficient unless they are supported by managerial leadership and incorporated into strategic decision processes. Previous studies have similarly shown that enterprise information systems strategies can shape organizational innovativeness when IT resources are deliberately orchestrated within strategy-making processes [7]. Yoshikuni also found that information systems-enabled strategy-making can improve corporate performance through dynamic and improvisational capabilities [8]. Likewise, the strategic contribution of information systems to decision-making and organizational performance depends on their alignment with managerial objectives and decision structures [5]. Therefore, the current findings confirm that leadership functions as a mechanism linking technological capabilities with strategic value creation.

With regard to contextual conditions, the study identified data governance and information quality, data-driven culture and human resource empowerment, and information integration and organizational coordination. The identification of data governance and information quality highlights the fact that data-driven strategy requires more than the accumulation of large

volumes of data. Strategic decisions are only as reliable as the information on which they are based. Poor-quality, fragmented, inconsistent, or inaccessible data can undermine analytical outputs and lead to weak strategic judgments. This finding is supported by research on big data analytics, which indicates that the strategic contribution of analytics depends on effective information management and the ability to transform data into useful decision inputs [17]. Wamba et al. similarly demonstrated that big data analytics can improve performance, particularly in dynamic environments, when organizations possess the capability to use analytics effectively [18]. The importance of data reliability is also reflected in research emphasizing security and reliability as essential prerequisites for effective strategic information systems [27]. Thus, data governance and information quality provide the structural foundation for trustworthy strategic analysis.

The second contextual condition, data-driven culture and human resource empowerment, indicates that the evolution of strategic management requires behavioral and cultural transformation alongside technological development. The experts emphasized training, analytical skills, organizational learning, information sharing, and the creation of a culture in which decisions are supported by evidence. This finding is consistent with the technology–knowledge perspective advanced by Li et al., which shows that digital transformation depends on the interaction between IT/IS capabilities and knowledge transfer [29]. It also corresponds with research indicating that information sharing strengthens the relationship between big data use and organizational innovation [19]. In this respect, the findings suggest that a data-driven culture reduces excessive reliance on intuition and enables more systematic use of digital information in strategic processes. Human resource empowerment is therefore not a supplementary element of information systems implementation; rather, it constitutes a necessary condition for converting technological capabilities into strategic capabilities.

Information integration and organizational coordination constituted the third contextual condition. The experts' emphasis on integration suggests that strategic management becomes more effective when information is shared across departments and systems rather than retained in isolated functional silos. This result is consistent with studies showing that information technology can enhance organizational integration and improve performance by connecting internal and external processes [14]. Similarly, integrated management accounting information systems have been shown to improve managerial efficiency by linking strategic and operational information [15]. The current findings therefore support the idea that organizational coordination and systems integration reduce information fragmentation and create a more unified basis for strategic decision-making.

The intervening conditions identified in the study were information technology challenges and barriers and organizational resistance to digital transformation. These findings indicate that the evolution of strategic management is not a linear process and may be constrained by technological deficiencies, implementation costs, limited analytical skills, systems incompatibility, security concerns, and resistance among managers and employees. This result is in line with research showing that cybersecurity risks must be integrated into strategic management because digital dependence increases organizational exposure to technological threats [26]. It also reflects the broader finding that advanced information systems require reliable, secure, and well-governed infrastructures if they are to contribute to strategic effectiveness [28]. Organizational resistance may further weaken the effects of digital technologies when employees or managers perceive data-driven decision-making as disruptive to established routines or authority structures. Therefore, the strategic benefits of digital transformation depend not only on technological readiness but also on change management, trust, communication, and cultural acceptance.

The study identified three major strategies and actions: data analytics and artificial intelligence in strategy support, data-driven market analysis and customer understanding, and strategic agility and dynamism in the digital environment. The first strategy emphasizes the use of advanced analytics, artificial intelligence, big data, scenario analysis, and real-time information to improve strategic decision-making. This finding is strongly aligned with the emerging literature on AI-enabled strategic management. Alhyasat et al. showed that artificial intelligence is increasingly influencing strategic management through predictive analytics, automation, and intelligent decision support [20]. Similarly, Sarker and Jahan demonstrated that AI-driven management information systems can support predictive monitoring and improve anticipatory decision-making [21]. The findings therefore suggest that AI and analytics are increasingly becoming embedded in the strategy process, enabling managers to evaluate complex information and alternative scenarios more systematically.

The second strategy, data-driven market analysis and customer understanding, shows that information systems contribute to strategic management by improving organizations' ability to detect market patterns, forecast demand, understand customer behavior, and identify new opportunities. This result is supported by Liu et al., who found that digital platform capabilities can enhance technological innovation by improving strategic information exchange and resource recombination [22]. Wang et al. also demonstrated that big data use can stimulate organizational innovation when it is aligned with business strategy and supported by information sharing [19]. Moreover, big data analytics can reveal hidden patterns and improve managerial decision-making across diverse organizational settings [17]. These findings reinforce the present conclusion that data-driven market intelligence enables organizations to shift from reactive market responses toward more anticipatory strategic behavior.

The third strategy, strategic agility and dynamism in the digital environment, reflects the importance of rapid information access, continuous monitoring, knowledge flows, and flexible strategy adjustment. The experts' emphasis on real-time access and dynamic strategy is consistent with the extensive literature linking IT capabilities with organizational agility. Tallon et al. identified organizational agility as a major outcome of strategically effective information technology use [10]. Mao et al. similarly found that IT capabilities can enhance operational agility through improved coordination and information processing [11]. Deng et al. further showed that IT alignment, cloud computing, and knowledge transfer contribute to organizational agility [12]. More specifically, Yoshikuni et al. demonstrated that enterprise information systems strategies can enhance organizational agility through IT-enabled dynamic capabilities [9]. Thus, the present findings confirm that the evolution of strategic management involves a movement away from static and periodic planning toward continuous, adaptive, and information-rich strategizing.

The final consequence identified in the model was data-driven innovation and competitive advantage. The findings showed that when organizations successfully establish data infrastructures, integrate information systems, strengthen digital leadership, develop analytical capabilities, and implement data-driven strategies, they can convert data into managerial insight, improve strategic planning and forecasting, support innovation, and build competitive advantage. This result is consistent with research demonstrating that information systems-enabled strategy-making can promote organizational innovativeness [7]. It also aligns with the resource orchestration perspective, according to which information technology can support innovation by enabling organizations to coordinate and recombine internal and external resources [23]. Mikalef et al. likewise demonstrated that flexible IT architecture and governance arrangements contribute to dynamic capabilities and competitive performance [13]. The role of information management in resilience and sustained organizational functioning

also supports this result, because organizations capable of maintaining reliable information flows are better positioned to adapt and innovate under changing conditions [24]. Overall, the findings indicate that competitive advantage in digitally transformed organizations increasingly depends on the organization's capacity to transform data into knowledge, knowledge into strategic action, and strategic action into innovation and adaptive performance.

The overall model also demonstrates that the evolution of strategic management is best understood as a multidimensional and systemic process rather than as the direct effect of a single technological capability. The causal, contextual, intervening, strategic, and outcome categories interact to shape the organization's ability to move toward data-driven and intelligent strategic management. This interpretation is consistent with contemporary studies showing that strategic management factors are strongly influenced by organizational context and institutional conditions [30]. It also supports the broader argument that strategic information management improves organizational performance when information resources are deliberately aligned with strategic priorities [3]. In this respect, the grounded theory model developed in the present study contributes by integrating previously fragmented dimensions—data infrastructure, leadership, governance, culture, integration, technological constraints, AI, analytics, market intelligence, agility, innovation, and competitive advantage—into a coherent process model. The quality of such theoretical development is particularly important in information systems research, where rigorous integration of prior knowledge and empirical evidence is essential for cumulative theory building [31].

This study has several limitations that should be considered when interpreting its findings. First, the research was qualitative and relied on in-depth interviews with 15 experts from organizations located in Baghdad; therefore, the findings are context-dependent and should not be interpreted as statistically generalizable to all organizations, industries, or geographical settings. Second, although theoretical sampling was continued until saturation, the perspectives obtained reflect the professional experiences and interpretations of the selected experts and may not fully represent the views of middle managers, operational employees, customers, or other stakeholders involved in information systems and strategic management. Third, the study examined perceptions at a single point in time, whereas both digital transformation and strategic management are dynamic processes that may evolve significantly as technologies, organizational capabilities, and environmental conditions change. Finally, the model was developed through qualitative coding and conceptual integration and was not empirically tested through a large-scale quantitative design.

Future studies can extend the present findings by quantitatively testing the proposed model using structural equation modeling and larger samples drawn from multiple industries, organizational sizes, and geographical regions. Comparative studies between public and private organizations, technology-intensive and traditional sectors, or organizations in different countries may help identify contextual differences in the relationships among data infrastructure, digital leadership, data governance, organizational culture, strategic agility, and innovation. Longitudinal research would also be valuable for examining how organizations progress through different stages of information-driven strategic management over time. Future studies may additionally examine moderating variables such as environmental dynamism, organizational size, digital maturity, leadership style, cybersecurity readiness, or regulatory conditions. Further qualitative research could explore the perspectives of employees at different hierarchical levels and investigate how trust in artificial intelligence, algorithmic transparency, and human–AI collaboration influence strategic decision-making.

Managers should treat information systems, data governance, and information management as core components of strategic management rather than as isolated technical functions. Organizations should invest in integrated data infrastructures, establish clear standards for data quality and governance, and ensure that decision-makers have timely access to reliable dashboards and analytical information. Senior leaders should strengthen collaboration between IT units and business functions and actively support evidence-based decision-making. Organizations should also develop employees' analytical and digital competencies through continuous training and create a culture in which information sharing and data-supported reasoning are encouraged. Artificial intelligence and advanced analytics should be gradually incorporated into forecasting, scenario planning, customer analysis, and strategic monitoring while maintaining appropriate managerial oversight. At the same time, organizations should address resistance to digital transformation through transparent communication, participatory implementation, and change-management programs. Finally, managers should continuously review cybersecurity, systems integration, and data reliability so that digital technologies can support strategic agility, innovation, and sustainable competitive advantage.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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