

Exploring the influence of management information systems on strategic planning: The mediating role of business intelligence

Kadri S. Al-Shakri^a, Rania S. M. Alzubaidi^b, Fawzi Hasan Altaany^c, Einad Sayel Abdel Aziz Al-Taani^d, Firas Tayseer Mohammad Ayasrah^e, Baha Aldeen Mohammad Fraihat^{f*} and Ahmad Y. A. Bani Ahmad^{g,h}

^aDepartment of Management Information Systems, Ajloun National Private University, Ajloun, Jordan

^bDepartment of Software Engineering, Princess Sumaya University for Technology, King Hussein School of Computing Sciences, Khalil Al-Saket St., Amman, Jordan, 11941

^cProfessor, Department of Finance, American University of Sharjah, United Arab Emirates

^dDoctorate in Business Administration (Customs Administration), Jadara University - Faculty of Business, Department of Customs and Tax Sciences, Jordan

^eCollege of Education, Humanities and Science, Al Ain University, Al Ain, United Arab Emirates

^fAssistant Professor, Department of Administrative Sciences, Business Faculty, Jerash University, P.O. Box 26150

^gDepartment of Accounting and Finance, Faculty of Business, Middle East University, Amman 11831, Jordan

^hApplied Science Research Center, Applied Science Private University, Jordan

CHRONICLE

Article history:

Received: November 26, 2023
Received in revised format: January 18, 2024
Accepted: February 20, 2024
Available online: February 20, 2024

Keywords:

Business Intelligence
Management Information Systems
Strategic Planning
Jordanian Public Listed Companies

ABSTRACT

This quantitative study investigates the relationships between Management Information Systems (MIS), Business Intelligence (BI), and Strategic Planning (SP) within Jordanian Public Listed Companies, with a focus on the mediating role of BI. The target population comprises employees from the 108 public shareholding companies listed on the Amman Stock Exchange, totaling an estimated 1,080 senior managers involved in strategic planning. A random sample of 285 employees was surveyed to achieve a 95% confidence level with a 5% margin of error. Data were collected using a structured questionnaire with multi-item scales adapted from prior studies. Structural equation modeling (SEM) was employed to test the conceptual framework and hypothesized relationships, utilizing the two-step SEM approach with AMOS software. The results reveal significant positive relationships among MIS, BI, and SP. Specifically, MIS exhibits a statistically significant positive effect on SP, supporting previous research indicating MIS provides comprehensive data for informed planning. Furthermore, MIS significantly influences BI capabilities, underscoring the importance of robust MIS infrastructure for advanced BI analytics. BI, in turn, positively impacts SP, aligning with literature suggesting BI tools enhance planning agility and effectiveness through data-driven insights. Bootstrapping analysis demonstrates that BI partially mediates the relationship between MIS and SP. While BI acted as a significant mediating variable, MIS had a significant direct impact on SP, implying that though MIS has a direct impact on SP, it has an indirect impact, through BI, as well. Further analysis revealed that the constructs are interconnected, and that the mediation of BI is a necessary part of the process in Jordanian Public Listed Companies. As such, acknowledging the relevance of MIS, BI, and SP and the mediating role of BI, organizations can adapt their decision-making to achieve sustained competitive advantage within the dynamic business environment in Jordan.

© 2024 by the authors; licensee Growing Science, Canada.

1. Introduction

Management Information Systems (MIS) have become critical tools for modern organizations all around the world. They provide managers with timely and accurate information necessary to facilitate the decision-making process for effective strategic positioning (Bostrom & Heinen, 1977; Pearlson, et al., 2024; Ismaeel, et al., 2023). Their significance, within the context

* Corresponding author.

E-mail address: Baha1f@yahoo.com (B. A. M. Fraihat)

ISSN 2561-8156 (Online) - ISSN 2561-8148 (Print)

© 2024 by the authors; licensee Growing Science, Canada.

doi: 10.5267/j.ijds.2024.2.014

of Jordan's progression towards a knowledge-based economy, cannot be overstated. For Jordanian public companies, strategic planning has assumed unprecedented importance, amidst intensifying competition and growing complexity. At its heart, MIS integrates technology, people, and processes, resulting in the gathering, processing, and dissemination of information essential to managerial decision making. Through MIS, managers can explore all aspects of the organization, as well as its environment; from operational performance to marketing and competitive trends, allowing them to execute their strategy with precision (Alsharari, 2024). Contemporary Jordan's economic transition emphasizes the pivotal role that knowledge and information play in this transformation, which magnify the importance of MIS. Jordanian public companies are gradually realizing the prerequisites necessary to join the knowledge-based economy. Many of the Jordanian companies find themselves having to face new challenges. The rapid rate of technological change combined with globalization creates a changing landscape that deserves an agile response from today's organizations. The archetype of MIS provides tools to capture data in real time about market forces, consumer sensitivities, and competitor actions that enable leaders to act, rather than react in creating solutions and thereby gain market share. Moreover, in a business environment where other Jordanian companies are already vying for competitive glory, effective strategic planning becomes essential. MIS forms the basis of all strategic decisions, providing managers with a comprehensive picture of both an organization's internal operations and external environment (Turnbull et al. 2023; Ismaeel, et al., 2023). By capitalizing on the insights that MIS generates, managers can identify new market opportunities, anticipate potential threats, and align organizational resources more effectively with the overall direction that the market is heading. Furthermore, MIS fosters collaboration and coordination across various departments within the organization. By streamlining communication channels and facilitating the sharing of information, MIS enhances organizational agility and responsiveness, enabling swift adaptation to changing market dynamics. In the context of Jordan's push towards a knowledge-based economy, where innovation and agility are imperative, the role of MIS in fostering organizational resilience cannot be overstated. However, Strategic planning, as defined by Ansoff (1991), constitutes the process through which organizations delineate their strategies and make decisions based on long-term objectives and goals. Effective strategic planning is instrumental in resource allocation, adaptation to evolving environments, and the acquisition of competitive advantages.

Research has evidenced the positive correlation between strategic planning and financial performance, particularly when firms employ explicit, rational processes (Wolf & Floyd, 2017). Nonetheless, strategic planning remains challenging, often marred by ambiguous and subjective decision-making processes prevalent in many organizations (Bresser & Bishop, 1983; Alkhawaldeh et al., 2023). This underscores the imperative for Management Information Systems (MIS) capable of furnishing accurate, timely data to facilitate objective, data-driven strategic planning. In essence, strategic planning serves as the compass guiding an organization toward its envisioned future state. It entails a systematic examination of internal strengths and weaknesses, coupled with an assessment of external opportunities and threats, culminating in the formulation of strategies aimed at leveraging strengths and mitigating weaknesses. Strategic planning enables organizations to allocate resources judiciously, to alter direction quickly when market conditions change, and to outmaneuver rivals when met with new opportunities. Despite its overwhelming usefulness, strategic planning faces numerous roadblocks--largely due to the subjective, unstructured decision processes characteristics of organizations. These ambiguities have the potential to produce suboptimal decision outcomes, impeding the organization's ability to achieve long-term objectives. Thus, there is a clear role for a management information system that provides accurate, timely information to facilitate structured decision-making by managers. MIS is a computer-based system that provides managers with tools to organize, evaluate and efficiently manage information to support operations, management, and decision-making (Laudon & Laudon, 2016).

MIS enhances organizational processes, strategic planning, and competitive positioning as it gathers, processes, and distributes information (Pearlson et al., 2016; Alkhawaldeh et al., 2023). MIS has significant value in that the system sends an array of both internal operational information and external market data that is critical for accurate and tangible business planning (Arvidsson, et al., 2014). Research has found that increased use of MIS is positively correlated with improvements in both planning and decision-making (Mithas et al., 2012). Business intelligence (BI) represents an important MIS application for public firms throughout Jordan and the remainder of the world (Negash, 2004). As a rule, BI encompasses software technologies and processes responsible for the collection, integration, analysis, and presentation of business information used to improve business performance (Negash, 2004). Put differently, BI systems are data management applications designed to collect, store, analyze and share various business operations data.

These systems are utilized to extract and report data from an organization's operational systems and are used primarily for informational purposes as opposed to transaction-based applications. BI systems send predictive, current, and historical analytics related to an organization's operations, its competitive environment, and relevant market trends (Hannula, Pirttimaki, 2003). Indeed, research has shown that BI enhances planning agility and decision quality by increasing environmental awareness and information processing capability (Popovic et al., 2012). We are interested in understanding how BI tools enabled by MIS mediate its impact on strategic planning success. While past research has examined MIS, BI, and planning separately (see e.g., Popovic et al., 2012), very little work has explored the relationships between all three. Moreover, almost no empirical research on this topic has been conducted in developing countries. As Jordan continues its trajectory toward a knowledge economy, understanding how information systems enable evidence-based strategic planning becomes more and more important. Our research hopes to begin to fill this gap by offering an integrated model on how both MIS and BI tools influence the effectiveness of strategic planning.

2. Literature review and Theoretical framework

The theoretical foundation for this study draws upon several established frameworks that provide insights into the interplay between Management Information Systems (MIS), organizational culture, organizational structure, technological infrastructure, and strategic planning. The integration of these dimensions was examined through the mediating role of Business Intelligence (BI), forming a comprehensive theoretical framework for the study.

2.1 Resource-Based View (RBV)

The Resource Based View (RBV) provides a useful theoretical lens for this study on how management information systems (MIS) and business intelligence (BI) tools influence strategic planning. RBV posits that organizations can gain sustainable competitive advantages from valuable, rare, inimitable, and non-substitutable resources (Barney, 1991). Valuable IT resources that are difficult for competitors to replicate, such as analytics expertise and proprietary data, can therefore enable strategic planning capabilities that drive performance. Specifically, RBV suggests MIS and BI are valuable firm resources that enhance strategic planning effectiveness. Sophisticated MIS accumulates, integrates, and distributes data about operations, markets, and competitors, providing inputs for evidence-based planning (Pearlson et al., 2016). Advanced BI analytics represent “the ability of an organization to take advantage of its information assets to identify new opportunities, reduce its threat or turn out to be the best in the industry” (Seddon et al., 2017). These systems are complex organizational assets that require time and expertise to build. RBV predicts that capabilities enabled by such rare, valuable, inimitable, and non-substitutable (Barney, 2014, p. 151) resources that are causally ambiguous (Clemons & Row, 1991) can lead to competitive advantages. By leveraging unique, inimitable information systems for advanced MIS and BI, firms can build a capability to support strategic planning as an organizational differentiator and source of competitive advantage that is valuable, rare, difficult to imitate, and for which there are no good substitutes. The study, therefore, offers empirical evidence of RBV propositions about how advanced MIS and BI drive strategic planning as a differentiating organizational capability and source of competitive advantage. The results will provide insights into how Jordan's public firms can leverage IS resources to effectively navigate today's complex, dynamic environments.

3. Previous Studies and Hypothesis Development

3.1 Management Information Systems and Strategic Planning

Prior research found that MIS can positively influence strategic planning effectiveness in organizations. Sophisticated MIS provides accurate, timely internal and external data that enables evidence-based planning aligned with business realities (Arvidsson et al., 2014; AlQudah et al., 2014). By processing information from various sources, MIS gives planners a comprehensive understanding of operations, markets, and competitors to make informed decisions (Pearlson et al., 2016). Firms that leverage MIS to support planning were found to have improved agility, resilience, and performance (Mithas et al., 2011). Based on RBV theory, IS capabilities can drive strategic planning as a source of competitive advantage (Clemons & Row, 1991; Al-habash, et al., 2023;). Therefore, this study hypothesizes that:

H₁: *Management information systems have a positive effect on strategic planning.*

3.2 Management Information Systems and Business Intelligence

Prior research found MIS provides the data foundation for effective BI analytics. MIS accumulates comprehensive, integrated data from various business systems and external sources (Hannula & Pirttimäki, 2003; Fraihat, et al., 2022). Sophisticated MIS ensures high quality, reliable data that enables complex BI analyses to generate actionable insights (Isik et al., 2013). Firms with MIS that capture granular, real-time data from operations and markets can develop advanced BI for accurate reporting, dashboards, and predictive analytics (Watson & Wixom, 2007). By leveraging MIS-enabled BI, organizations enhance information processing capabilities, agility, and decision quality (Popovic et al., 2012). Therefore, this study hypothesizes that:

H₂: *Management information systems have a positive and significant effect on Business intelligence.*

3.3 Business Intelligence and Strategic Planning

Prior research found BI analytics can enhance strategic planning capabilities and outcomes. BI tools provide historical, current, and predictive insights about operations, markets, and competitors to support data-driven planning (Hannula & Pirttimäki, 2003; Zoubi, et al., 2023). By processing large datasets, BI enables complex modeling for informed, forward-looking decisions aligned with business realities (Seddon et al., 2017). Firms leveraging BI for external and internal analysis were found to have improved planning agility, resilience, and performance (Popovic et al., 2012). BI also supports collaborative planning through data sharing and interactive visualizations (Azma & Mostafapour, 2012). Therefore, this study hypothesizes that:

H₃: *Business intelligence has a positive and significant effect on strategic planning.*

3.4 The Mediating Role of Business Intelligence

Prior research found BI analytics mediate the impact of MIS data on planning outcomes. High-quality MIS providing comprehensive, timely data enables more advanced BI tools (Isik et al., 2013). Firms with integrated MIS that capture granular operational and market data can perform sophisticated analytics like predictive modeling and scenario analysis to inform planning (Watson & Wixom, 2007). By processing MIS data into strategy-relevant insights, BI enhances information value for planning (Seddon et al., 2017). Organizations that effectively leverage MIS-enabled BI make more agile decisions aligned with business realities (Popovic et al., 2012). Therefore, this study hypothesizes:

H₄: *Business intelligence mediates the relationship between management information systems and strategic planning.*

Based on the above evidence, this study developed the research mode in Fig. 1

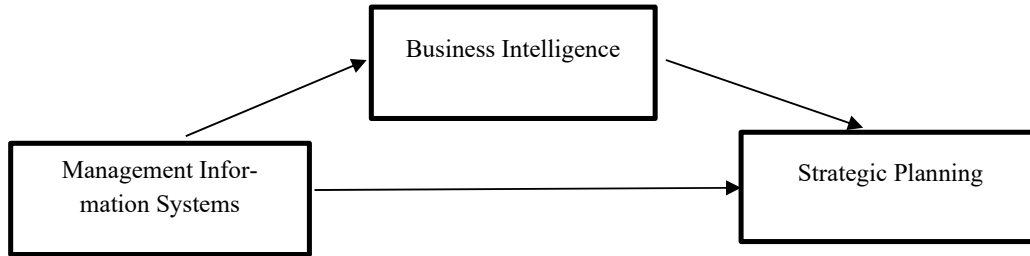


Figure 1 Research Model

4. Methodology

This study uses quantitative design to examine the relationships between management information systems, business intelligence, and strategic planning. The target population comprises employees from the 108 public shareholding companies listed on the Amman Stock Exchange (ASE, 2020). The estimated population size is 1,080 senior managers involved in strategic planning. A random sample of 285 employees surveyed to achieve 95% confidence level with a 5% margin of error. The data were collected using a structured questionnaire with multi-item scales adapted from prior studies. The survey instrument pilot tested before deployment to refine the scales. The final questionnaire administered online to collect data efficiently from the geographically dispersed sample. Management Information System (MIS) was measured using an established instrument assessing system quality, functionality, and information quality (Gorla et al., 2010). Business Intelligence (BI) measured by the variety of analytical tools used and frequency of use, based on Popovic et al. (2012). Strategic planning (SP) used dimensions like objective setting, environmental scanning, and implementation. All constructs use multi-item reflective scales anchored on a 5-point Likert scale. Structural equation modeling (SEM) will be used to test the conceptual framework and hypothesized relationships. SEM is suitable for modeling mediation effects while accounting for measurement error (Iacobucci et al., 2007). The two-step SEM approach was followed using AMOS software.

5. Data Analysis

5.1 Confirmatory Factor Analysis (CFA): Measurement Model

Table 1 and Fig. 2 present the results of the measurement model analysis. The purpose of this analysis is to assess the validity and reliability of the constructs and associated measurement items in the study (Hair et al., 2014). To evaluate validity and reliability of the measurement items for the three constructs, i.e., business intelligence (BI), management information systems (MIS), and strategic planning (SP) (see Fig. 1) the factor loadings for all measurement items are first assessed. Since all factor loadings of the measurement items exceed 0.6, convergent validity is achieved (Hair et al., 2014). Following this relevancy check, for the three constructs BI, MIS, and SP, the construct reliability values were calculated using composite reliability (CR). These values exceeded the threshold of 0.7 indicating strong internal consistency reliability (Nunnally, 1978). Subsequently, AVE was evaluated and for each of the three constructs, it exceeded the 0.5 criteria indicating good reliability (Hair et al., 2014). Thus, the measurement items used adequately capture the variance within their respective constructs. Based on the model fit indexes in Fig. 2, there is evidence that the structural equation model in this study has an acceptable fit with the data. The p-value of 0.000 indicates the model is statistically significant (Barrett, 2007). The RMSEA value of 0.049 is below the 0.06 cutoff, suggesting a close model fit (Hu & Bentler, 1999). The CFI value of 0.907 exceeds the recommended 0.9 threshold for adequate fit (Bentler, 1990). The TLI value of 0.914 is above the 0.9 benchmark (Hooper et al., 2008). The IFI of 0.908 is also above the desired 0.9 level (Byrne, 2010). The ChiSq/df ratio of 2.584 is under the suggested 3.0 maximum for reasonable fit (Kline, 2005).

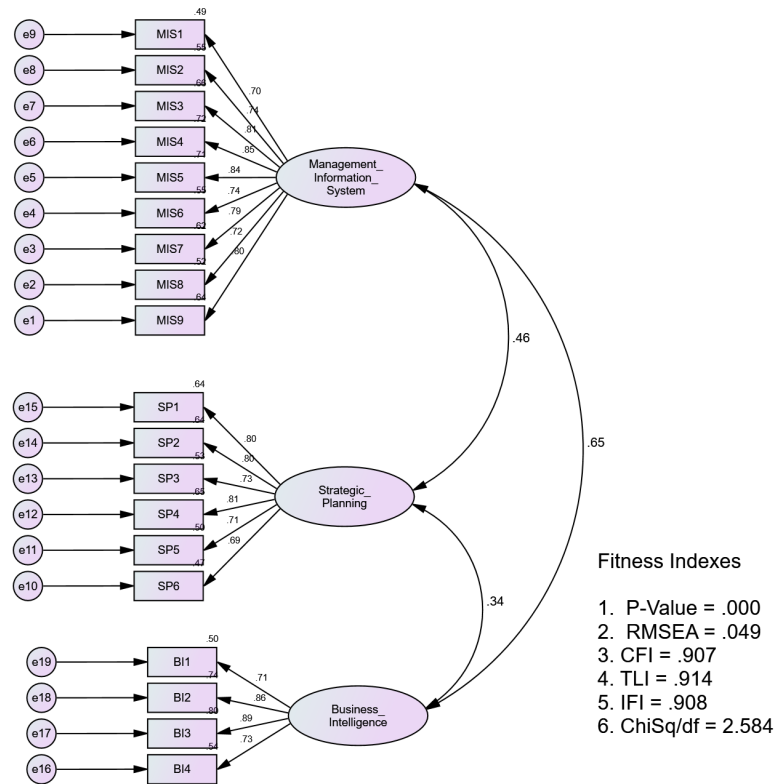


Fig. 2. Standardized Result of the Measurement Model

Table 1
Measurement Model

Constructs	Factor Loading	CR	AVE
Business Intelligence		0.877	0.643
BI1	0.708		
BI2	0.857		
BI3	0.894		
BI4	0.733		
Management Information System		0.932	0.606
MIS1	0.702		
MIS2	0.741		
MIS3	0.813		
MIS4	0.849		
MIS5	0.842		
MIS6	0.740		
MIS7	0.786		
MIS8	0.720		
MIS9	0.799		
Strategic Planning		0.889	0.573
SP1	0.801		
SP2	0.801		
SP3	0.728		
SP4	0.805		
SP5	0.710		
SP6	0.686		

5.2 Discriminants Validity

Table 2 presents the results of the discriminant validity analysis among the three constructs - strategic planning, management information systems, and business intelligence. Discriminant validity determines whether the constructs in a model are distinct and measuring different concepts. This is assessed by comparing the square root of the average variance extracted (AVE) for each construct with its bivariate correlations with other constructs (Fornell & Larcker, 1981). As seen in the diagonal bold values, the square root of AVE for each construct is greater than its highest correlation with other constructs. Strategic planning's AVE square root is 0.757, exceeding its highest correlation of 0.459 with MIS. Similarly, MIS's AVE square root of

0.779 is greater than its correlations with SP and BI. And BI's AVE square root of 0.802 exceeds its correlations with the other two constructs. Finally, the results support the discriminant validity of the measurement models used in this study.

Table 2
Results of Discriminants Validity

Constructs	Strategic Planning	Management Information System	Business Intelligence
Strategic Planning	0.757		
Management Information System	0.459	0.779	
Business Intelligence	0.345	0.652	0.802

5.3 Structural Equation Model Result

Based on the results in Table 3 and Fig. 3, management information systems (MIS), business intelligence (BI), and strategic planning (SP) all have significant positive relationships in the context of Jordanian public listed companies. Specifically, the MIS → SP path has a beta of 0.08 and p-value of 0.022, indicating MIS has a statistically significant positive effect on SP. This aligns with past research that found MIS provides comprehensive data to enable more informed planning (Arvidsson et al., 2014). Additionally, the MIS → BI path's beta of 0.536 and p-value of 0.000 shows MIS positively influences BI capabilities. This supports prior studies demonstrating that robust MIS is crucial for providing the integrated, high-quality data needed for advanced BI analytics (Isik et al., 2013). Finally, the BI → SP path with a beta of 0.570 and p-value of 0.000 indicates BI has a significant positive impact on SP. This is consistent with literature finding BI tools lead to improved planning agility and effectiveness through data-driven insights (Seddon et al., 2017).

Table 3
Structural Results

Hypotheses	Estimate	S.E.	C.R.	P-values	Decision
Strategic Planning← Management Information System	0.080	0.035	2.296	0.022	Supported
Business Intelligence← Management Information System	0.536	0.035	15.182	0.000	Supported
Strategic Planning← Business Intelligence	0.570	0.044	12.955	0.000	Supported

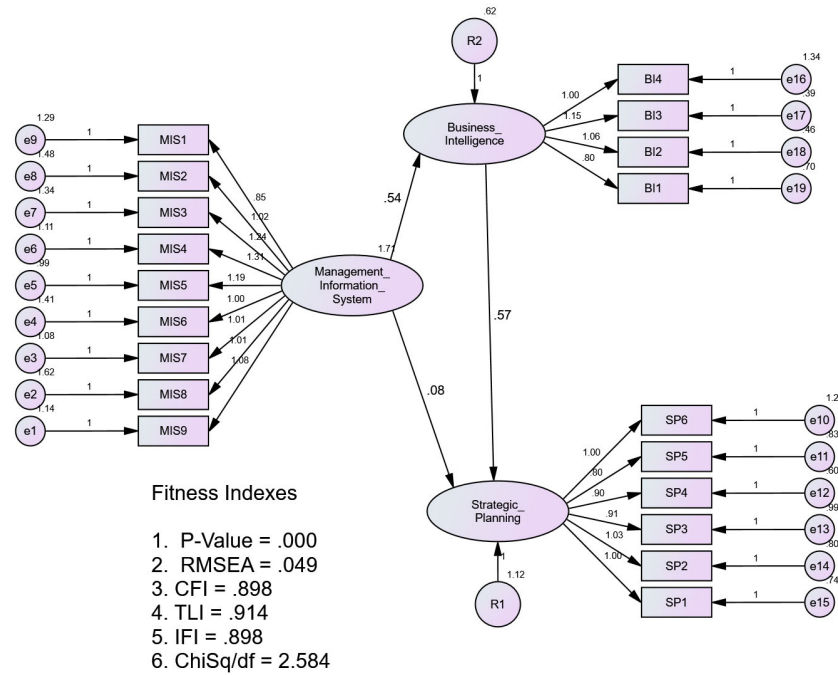


Fig. 2. Unstandardized Structural Results

5.4 Validation of Mediation Test Using Bootstrapping

Based on the bootstrapping results in Table 4, business intelligence partially mediates the relationship between management information systems and strategic planning. The indirect effect of MIS on strategic planning through BI is statistically significant with a bootstrapping value of 0.308 and p-value of 0.000. This indicates BI plays a mediating role. However, the direct effect of MIS on strategic planning is also significant with a value of 0.08 and p-value of 0.000. This means partial mediation exists, where MIS influences strategic planning directly as well as indirectly through BI.

Table 4
Bootstrapping Result for Testing Business Intelligence as a Mediator

Hypothesis	Indirect Effect (a×b)	Direct (c)
Bootstrapping Value	0.308	0.08
Probability Value	0.000	0.000
Results on Mediation	Significant	Significant
Mediation exists since indirect effects is significant		
Type of Mediation	Partial Mediation since the direct effect is also significant	

6. Discussion

A positive and significant effect on strategic planning within Jordanian Public Listed Companies by Management Information systems (MIS) reflects how technology plays a critical role in enhancing organizational decision-making processes. It equips managers with a reliable source of data and helps them in real time decision making, thus allowing them to make strategies within much tighter confines by genuine analytics but with more analytical depth and effectiveness. Jordan is seeking to ascertain a learning driven economy, against tightening competitiveness and shifting dynamics of the market. Efficient planning will always play a prominent role in Jordan's longer-term efforts of pursuing a foreign policy among the "keys countries" of the world. MIS here is the medium that creates this kind of picture – it is a tool for managing cyclical (or internal) and linear processes including such aspects as market forces, consumers' behavior etc. This data enables the management to track trends in the market, grasp opportunities that are starting to emerge, and keep ahead of possible threats and utilize the organization's resources in a way that will be most beneficial to them. MIS positive effect and its role in the strategic planning of Jordanian Listed Public Companies shows that companies recognize technology as an important factor in implementing and strategic planning process that organizations are involved in to overcome competition in a brutal environment. Jordanian Publicly Listed Companies are crediting a reliable MIS infrastructure and system to pave the way to their agility, quick amendment, and the ability to intuit the forthcoming market challenges. The discovery that the use of Management Information Systems (MIS) really yields a positive and important enhancement for Public Listed Companies in Jordan in undoubted manner reflects the outstanding power of technology that hugely plays in upgrading the efficiency of organizational decision-making as well above-a-level intelligence collection.

Making sure managers have access to accurate, relevant data in a timely fashion, a foundational element of BI initiatives, MIS does just that. By arming businesses with the tools to turn raw data into meaningful, actionable intelligence, via the deployment of advanced data analytics and reporting capabilities, MIS is incredibly empowering in this regard, extending a business' ability to make well-informed decisions at nearly every level of its enterprise. In other words, the finding that the relationship between MIS and BI is both positive and significant in the sample of Jordanian Public Listed Companies provides compelling evidence that today, business leaders are indeed recognizing the strategic imperative of using technology to drive intelligence-driven decision-making. So, by investing in robust MIS infrastructure and systems, these companies are arming themselves with the capabilities to unleash the full power of their data assets, uncovering the trends, patterns, and insights that can inform strategic initiatives and drive competitive advantage. Data as a culture is also an additional aspect of the system. It encourages organizations to become modern, flexible, and dynamic in their response to the market forces. Therefore, MIS systems with BI features will allow companies to make decisions based on customers as well as old and new markets, competitors, and other factors, hence gaining an ability to realize new revenues and cost savings, as well as to minimize risks and threats.

The discovery declares that Business Intelligence serves as a positive and considerable factor to the Strategic Planning of Jordanian Public Listed Companies emphasizes that data-driven intelligence becomes the most important asset for an organization on the way it identifies the right position and builds up the priorities for the decision-making. Besides, experience of a sophisticated capability is a major attribute that any organization seeks in its endeavors to thrive in the country of the Kingdom like Jordan. This can easily be attributed to the business space which is full of cutthroat competition and unlimited varieties of goods and services. On the one hand, Business Intelligence backed by powerful reporting and analytics engines provides companies with the means of mining for useful intelligence from vast stores of data. On the other hand, it empowers decision-makers to see the big picture and do so using reliable, data-driven information giving impetus to the business strategizing. Through this study it is evident that the impact of Business Intelligence on Strategic Planning was a positive one having a crucial role in the identification of the direction in which an organization plans to steer. It is evident that data-driven insights have now become instrumental in the process of determining the course and nature of strategic approaches. They do this through anticipating, unveiling new growth levers, and ensuring the BI system is implemented within their organization's planning framework. Another important capability of Business intelligence is to construct the basis for the development of company's competitiveness by analyzing customer likes and preferences, the market situation and their competitor's behavior. This will highly increase the capability and adeptness of Jordanian Public Listed Companies in terms of strategy development and effectiveness, as they will have the ability to properly allocate resources and efforts to comply with shifting market demands and company goals. An organization that is BI-driven culture would be one where decisions are based on actual facts - therefore, these environments come with improving transparency, accountability the way failure would be responded to but

also which would refine and strengthen the decision making process all over the organization. Through embellishing their BI capability, Jordanian Public Listed Companies will be in a position to use resources smartly, saleable, and performance driven. The business entities are likely to act on the sustainability of their operations and come up with initiatives that yield a win-win impact in the market space.

Such result implies that business intelligence (BI) may at least mediate the connection between MIS and strategic planning, allowing a more nuanced role of the technological infrastructure, data driven insights, and organizational decision-making process at Jordanian Public Listed Companies. MIS lays the foundation for organizational data management. It provides managers with accurate and timely information needed for strategic planning. Due to the fact that it helps in integrating various data sources and assists in data processing and analysis, MIS enables managers to better understand market trends, competitor actions, and internal operations – all of which help in shaping strategic decisions. The partial mediation effect of BI implies that MIS leads to data access and processing that BI tools and techniques build into raw data becoming actionable insights for strategic planning. Business Intelligence (BI) allows firms to uncover significant patterns and trends across their information reserves, in raw form, fit for strategic auctioning. As an intermediary construct, BI between MIS and strategic planning enhances the effect of MIS on strategic decision-making by its mechanisms which primarily corresponds to how data is transformed into intelligence. In addition, it implies that through leveraging BI capabilities, Jordanian Public Listed Companies can seamlessly connect data management and strategic implementation, enabling managers to take informed action and make long-range, proactive decisions in line with company goals. The partial mediation effect also underlines the significance of investing not only in a strong MIS infrastructure, but also in developing BI capabilities to maximize the potential of organizational data for strategic planning purposes. By understanding that MIS, BI, and strategic planning are interactive capabilities that complement each other, companies can better optimize their decisional processes, and in turn, gain an advantage in the dynamic business environment of Jordan.

7. Recommendations and Future Studies

Besides, in many cases, the realization of the benefits of advanced analytics is built on an ability to deliver accurate and timely data to the analytics platform. To maintain the infrastructure and ensure the continuous availability, it is highly recommended for the Jordanian Public Listed Companies to invest in the maintenance of a robust MIS infrastructure adopting the newest technologies and systems that can support the activities of data integration, storage, and retrieval necessary. The potential exists for organizations pursuing advanced analytics to put significant pressures for change on the IT organizations that must support these initiatives. Furthermore, the incremental approach will probably require the development of BI capabilities and the training and encouragement of those responsible for analyzing and interpreting the data to make them familiar with BI tools and to assist them in the development of the skills to allow them to make sense of the data so as to transform it into insights that will result in effective actions and substantial results. There should be seamless integration between MIS and BI systems to ensure a smooth flow of data from collection to analysis. Companies should explore ways to automate data extraction and processing processes to improve efficiency and accuracy. Foster a culture of data-driven decision-making within the organization in which the importance of incorporating MIS and BI insights in strategic planning is emphasized. This requires changing mindsets so future endeavors could be to examine further how MIS and BI, shape strategic planning within PLCs in Jordan. This study could be expanded into a qualitative examination of the mechanisms through which MIS and BI influence strategic planning in Jordanian Public Listed Companies. This may be done through interviews or focus groups with senior managers to gain a better understanding of how they utilize MIS and BI, as well as the information from the individual in the basement, in their decision-making processes. A final potential future research direction is to study the long-term impact of the implementation of MIS and BI on strategic planning outcomes over time, including considering longitudinal studies to understand how sustainable and scalable MIS and BI initiatives are across time in driving organizational performance and how the influence of MIS and BI on strategic planning varies by industry or by region within Jordan, as such comparisons could unveil industry-specific challenges and opportunities to MIS and BI and how the impact the effectiveness of strategic planning. Finally, it could also be interesting to consider how cultural factors impact the relationship between MIS, BI, and strategic planning in Jordanian Public Listed Companies. A comparative study between different cultures would enable researchers to assay the difference between the decision-making process that take place in these different cultures, and would provide insights in how managerial, technical, and organizational levels of decisions are structured in different cultural contexts.

8. Conclusion

This research unveils the complex interplay between Management Information Systems (MIS), Business Intelligence (BI) and Strategic Planning (SP) within Jordanian Public Listed Companies. A quantitative methodology was adopted in testing the relationships between these constructs, unfolding their diverse effects on the process of organizational decision-making. This research found significant positive relationships among MIS, BI and SP and, in doing so, provides evidence of MIS as a fundamental enabler of both BI capabilities and strategic planning effectiveness. The comprehensive data provision of a high-quality MIS provides the foundation for informed decision-making and strategic formulation, in accordance with prior research that has highlighted the primacy of MIS in augmenting the planning process. The study also supports the idea that a sound MIS infrastructure is critical for supporting advanced BI analytics, which, in turn, leads to refined strategic planning

outcomes. Moreover, the strong and positive impact of BI on strategic planning will further establish BI as a critical enabler of organizational agility and effectiveness. By using BI tools and methods, organizations can effectively transform data into actionable insights that digest, anticipate, and respond to market dynamism, identify opportunities for growth and proactively avoid or mitigate threats and rivals. This finding is consistent with the existing literature that posits the transformative role of BI in enhancing planning agility and responsiveness. Finally, the identification of a partial mediation effect further suggests that the relationships between MIS, BI, and strategic planning are nuanced. Second, BI partially mediates the MIS-SP relationship, as MIS exerts a significant direct effect on SP within the SEM model. This suggests that MIS remains a compellingly significant disseminator of strategic insight across the firm, but it may do so for several reasons. That is, the MIS-SP relationship is a more multifaceted one, whereby MIS likely impacts SP directly and indirectly, through BI.

References

- Al-habash, M. A., Buraik, O., Yousef, M., Alali, A. M. F., Al-Shukri, K. S., & Fraihat, B. A. M. (2023). The Effect of Sustainable Entrepreneurship on Economic Development in Jordan: The Mediating Role of Environmental Performances. *Migration Letters*, 20(6), 185-202. <https://doi.org/10.59670/ml.v20i6.3472>
- Alkhawaldeh, B. Y., Alhawamdeh, H., Al-Shukri, K. S., Yousef, M., Shehadeh, A. Y. A., Abu-Samaha, A. M., & Alwreikat, A. A. (2023). The Role of Technological Innovation on the Effect of International Strategic Alliances on Corporate Competitiveness in Jordanian International Business Administration: Moderating and Mediating Analysis. *Migration Letters*, 20(6), 282-299.
- AlQudah, N. F., Mathani, B., Aldiabat, K., Alshakary, K., & Alqudah, H. M. (2022). Knowledge sharing and self-efficacy role in growing managers' innovation: Does job satisfaction matter?. *Human Systems Management*, 41(6), 643-654.
- Ansoff, H. I. (1991). Critique of Henry Mintzberg's 'The design school: Reconsidering the basic premises of strategic management'. *Strategic Management Journal*, 12(6), 449-461.
- Arvidsson, V., Holmström, J., & Lyytinen, K. (2014). Information systems use as strategy practice: A multi-dimensional view of strategic information system implementation and use. *The Journal of Strategic Information Systems*, 23(1), 45-61.
- ASE (2020). Listed companies. Amman Stock Exchange. <http://www.exchange.jo>
- Azma, F., & Mostafapour, M. A. (2012). Business intelligence as a key strategy for development organizations. *Procedia Technology*, 1, 102-106.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Barrett, P. (2007). Structural equation modelling: Adjudging model fit. *Personality and Individual Differences*, 42(5), 815-824.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological bulletin*, 107(2), 238.
- Bostrom, R.P. & Heinen, J.S. (1977). MIS problems and failures: A socio-technical perspective, part II: The application of socio-technical theory. *MIS Quarterly*, 1(4), 11-28.
- Bresser, R. K., & Bishop, R. C. (1983). Dysfunctional effects of formal planning: Two theoretical explanations. *Academy of Management Review*, 8(4), 588-599.
- Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. Routledge.
- Clemons, E. K., & Row, M. C. (1991). Sustaining IT advantage: The role of structural differences. *MIS Quarterly*, 15(3), 275-292.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Fraihat, B. A. M., & Al-Afeef, M. A. M. (2022). The Moderating Effect of Financial Technology (Fintech) Innovation between Knowledge Management Infrastructure and Institutions Performance. *World Wide Journal of Multidisciplinary Research and Development*, 8(1), 91-95. <https://doi.org/10.17605/OSF.IO/NMKVH>
- Gorla, N., Somers, T. M., & Wong, B. (2010). Organizational impact of system quality, information quality, and service quality. *The Journal of Strategic Information Systems*, 19(3), 207-228.
- Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2014). *Multivariate data analysis: Pearson new international edition*. Pearson Higher Ed.
- Hannula, M., & Pirttimäki, V. (2003). Business intelligence empirical study on the top 50 Finnish companies. *Journal of American Academy of Business*, 2(2), 593-599.
- Hooper, D., Coughlan, J., & Mullen, M. (2008, September). Evaluating model fit: a synthesis of the structural equation modelling literature. In *7th European Conference on research methodology for business and management studies* (Vol. 2008, pp. 195-200).
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal*, 6(1), 1-55.
- Iacobucci, D., Saldanha, N., & Deng, X. (2007). A meditation on mediation: Evidence that structural equations models perform better than regressions. *Journal of Consumer Psychology*, 17(2), 139-153.
- Isik, O., Jones, M. C., & Sidorova, A. (2013). Business intelligence success: The roles of BI capabilities and decision environments. *Information & Management*, 50(1), 13-23.

- Ismaeel, B., Alkhawaldeh, B. Y., & Alafi, K. K. (2023). The role of marketing intelligence in improving the efficiency of the organization: An empirical study on jordanian hypermarkets. *Journal of Intelligence Studies in Business*, 13(2), 32-42.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling*. Guilford publications.
- Laudon, K.C., & Laudon, J.P. (2016). *Management information systems: Managing the digital firm* (14th ed.). Pearson Education Limited.
- Mithas, S., Ramasubbu, N., & Sambamurthy, V. (2011). How information management capability influences firm performance. *MIS Quarterly*, 35(1), 237-256.
- Negash, S. (2004). Business intelligence. *Communications of the Association for Information Systems*, 13(1), 54.
- Pearlson, K. E., Saunders, C. S., & Galletta, D. F. (2016). *Managing and using information systems: A strategic approach*. John Wiley & Sons.
- Popovic, A., Hackney, R., Coelho, P. S., & Jaklic, J. (2012). Towards business intelligence systems success: Effects of maturity and culture on analytical decision making. *Decision Support Systems*, 54(1), 729-739.
- Seddon, P. B., Constantinidis, D., Tamm, T., & Dod, H. (2017). How does business analytics contribute to business value?. *Information Systems Journal*, 27(3), 237-269.
- Watson, H. J., & Wixom, B. H. (2007). The current state of business intelligence. *Computer*, 40(9), 96-99.
- Wolf, C., & Floyd, S. W. (2017). Strategic planning research: Toward a theory-driven agenda. *Journal of Management*, 43(6), 1754-1788.
- Zoubi, M., ALfari, Y., Fraihat, B., Otoum, A., Nawasreh, M., & ALfandi, A. (2023). An extension of the diffusion of innovation theory for business intelligence adoption: A maturity perspective on project management. *Uncertain Supply Chain Management*, 11(2), 465-472. <http://dx.doi.org/10.5267/j.uscm.2023.3.003>



© 2024 by the authors; licensee Growing Science, Canada. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY) license (<http://creativecommons.org/licenses/by/4.0/>).