“Nexus of business intelligence capabilities, firm performance, firm agility, and knowledge-oriented leadership in the Jordanian high-tech sector”

AUTHORS	Khaldoon Khawaldeh Amro Alzghoul

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Khaldoon Khawaldeh (Jordan), **Amro Alzghoul** (Jordan)

NEXUS OF BUSINESS INTELLIGENCE CAPABILITIES, FIRM PERFORMANCE, FIRM AGILITY, AND KNOWLEDGE-ORIENTED LEADERSHIP IN THE JORDANIAN HIGH-TECH SECTOR

Abstract

The objective of this study is to investigate the influence of business intelligence capabilities on firm performance, with a specific emphasis on the role of firm agility and the impact of knowledge-oriented leadership within this association. The paper used a quantitative approach using data from a sample of 237 participants randomly chosen from a pool of 34 high-tech companies in Jordan. The study included a diverse range of participants, including individuals occupying various professions, such as managers, supervisors, analysts, and other relevant positions. This broad sample was selected to provide a full comprehension of the influence of business intelligence capabilities on firm performance. This approach allowed for the inclusion of various organizational levels and views, therefore capturing a wide range of insights. The study used the partial least squares modeling technique to analyze cross-sectional data to investigate the proposed model. The findings of this analysis, with a statistically significant p-value of less than 0.05, elucidate that the capabilities of business intelligence exert a substantial influence on the agility of a firm, subsequently affecting the firm's overall performance. Moreover, firm agility mediates the correlation between its business intelligence capabilities and firm performance. Additionally, knowledge-oriented leadership moderates the effect of business intelligence capabilities on firm agility.

Keywords leadership styles, operational performance, innovation drivers, high-tech industries, Jordan

JEL Classification L25, M10, M54

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Khaldoon Khawaldeh, Ph.D., Associate Professor, Business Administration Department, Faculty of Business, Amman Arab University, Jordan.

Amro Alzghoul, Ph.D., Assistant Professor, Business Administration Department, Faculty of Business, Amman Arab University, Jordan. (Corresponding author)

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INTRODUCTION

In the hyper-competitive landscape of modern business, marked by fast technical advancements and unexpected market fluctuations, businesses are pushed to constantly adjust and evolve (Panda, 2022). One significant turning point for several recent research has been enhancing business intelligence capabilities (Bordeleau et al., 2020; Ping & Yuen, 2019). The motivation for this commitment stems from a desire to enhance client experiences, optimize operational efficiency, and establish data-driven decision-making protocols. However, the relationship between business intelligence capabilities and concrete business success seems complex, indicating the potential influence of other internal organizational elements (Alzghoul et al., 2022; Khaddam et al., 2023).

Firm agility denotes the inherent capacity of an organization to expeditiously discern and adjust to fluctuations within the market, demonstrating a high proficiency level in effectively navigating and responding to such changes. The ability to be responsive is not just a necessary

operational need but also a strategic lever that has the potential to amplify the benefits derived from business intelligence capabilities. Nevertheless, the effectiveness of this agility and its interconnectedness with business intelligence capabilities does not function in a vacuum. The concept under consideration is closely linked to the leadership framework of the business, specifically focusing on a phenomenon known as knowledge-oriented leadership. Leaders with a deep respect for knowledge, a commitment to ongoing learning, and an inclusive attitude to sharing information may play a crucial role in influencing the relationship between agility, business intelligence, and performance.

Even with the acknowledged importance of business intelligence in propelling business strategies, there exists a need for comprehensive understanding regarding its impact on firm agility, which is an indispensable organizational asset for effectively adapting to the ever-changing dynamics of the marketplace. Moreover, the unexplored aspect of the moderating influence of knowledge-oriented leadership in this association requires further investigation.

1. LITERATURE REVIEW AND HYPOTHESES

As a strategic capability, firm agility is linked with improved performance outcomes. Teece et al. (1997) posited that dynamic capabilities, like agility, grant firms a competitive edge, allowing them to capitalize on emerging opportunities while navigating threats. Several empirical studies, such as Sharifi and Zhang (1999), have reported a positive relationship between firm agility and its performance. In addition, Yang and Liu (2012) suggest that a firm's ability to navigate its operational and strategic domains nimbly, combined with its relationship dynamics, can substantially uplift its market standing and financial health. At the same time, Wanasida et al. (2021) illuminated the pivotal role of business capabilities in buttressing organizational agility and, consequently, performance during the crisis. The study reaffirmed that agility is not just a strategic advantage but also a survival mechanism, especially during unforeseen adversities. Agile organizations could swiftly pivot their strategies, thus ensuring sustained performance even amid global upheavals.

Contemporary research consistently attests to the profound influence of organizational agility on firm performance. Nafei (2016) professed that organizational agility is essential to enhance performance. By dissecting various agility dimensions, the study highlighted that firms with adaptive structures, flexible strategies, and dynamic capabilities outperform their less agile counterparts. Moreover, Cho et al. (2023) unearthed the intertwined roles of organizational agility and absorptive capacity in attaining superior performance. Their findings accentuated that for firms to thrive in international markets, more than mere agility might be required. Instead, a synergy between agility and the ability to absorb external knowledge (absorptive capacity) is vital. Likewise, Khalil et al. (2023) scrutinized factors affecting firm performance after the COVID-19 pandemic. Their study highlighted a trio of determinants: big data analytics capability, organizational agility, and innovation. Among these, organizational agility emerged as a paramount factor, suggesting that even in niche sectors like hospitality, agility's influence on performance remains profound. This underpins the universality of agility's role in performance enhancement across diverse sectors.

The role of business intelligence in the contemporary corporate landscape is evident in how companies utilize data for decision-making, process enhancement, and competitive positioning (Bharadiya, 2023). At its core, business intelligence encompasses tools, processes, and structures that enable organizations to collect, analyze, and interpret business information (Khaddam et al., 2023). By doing so, business intelligence equips firms with insights that can drive strategic decision-making, process optimization, and enhanced responsiveness (Kuilboer et al., 2016). It plays a pivotal role in modern enterprises; as businesses become more data-centric, the influence of business intelligence capabilities on operational and strategic paradigms has been a focal point of research (Lutfullayeva, 2023; Olszak & Ziemba, 2012).

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Firm agility refers to the speed and efficiency with which a company can adapt to shifting conditions in its surrounding environment (Ahmed et al., 2022; Lin et al., 2020). Sherehiy et al. (2007) claim that the capacity of a company to quickly adjust to changes in the market, both internal and external, without losing sight of the organization's goal is one definition of the concept of agility in business. The relationship between business intelligence capabilities and firm agility is direct and multifaceted. Contemporary research underscores that while business intelligence tools are instrumental in providing insights, it is the broader ecosystem, encompassing informing mechanisms and IT infrastructure, that translates these insights into actionable agility. According to Popovič et al. (2018), the capabilities of business intelligence offer an empirical basis for agile decision-making via real-time analytics and foresight. Business intelligence tools allow organizations to alter their plans more easily because they help them understand their internal operations and market dynamics. As firms navigate an increasingly volatile business landscape, integrating business intelligence capabilities remains crucial to bolster adaptability and responsiveness (Chen & Lin, 2021).

The capacity to effectively manage uncertainties and complexity is an essential organizational talent that has the potential to enhance the impact of business intelligence capabilities on firm performance (Abousweilem et al., 2023; Asare et al., 2020; Qaffas et al., 2023). The inclusion of firm agility as a mediator expands the traditional models that primarily focus on direct effects (Alyahya et al., 2023; Buhasho et al., 2021). These models overlook the combined value generated by integrating business intelligence capabilities and agility. Kuilboer et al. (2016) emphasized the role of business intelligence capabilities as critical facilitators to achieve organizational agility. Their work suggests that the insights and analytics derived from business intelligence tools empower firms to swiftly respond to environmental changes. This responsive ability, rooted in informed decision-making, is a cornerstone for organizational agility. Broadening the scope of business intelligence influence, Cheng et al. (2020) addressed its impact on the speed of internationalization. Their findings elucidated that business intelligence not only facilitates domestic agility but also expedites a firm's pace of global expansion. By leveraging business intelligence, firms can anticipate global market trends, respond to international challenges, and pivot their strategies accordingly.

Recent studies introduced three interconnected facets of agility: business intelligence, informing, and organizational agility (Skyrius & Valentukevičė, 2020). Business intelligence agility relates to the ability of business intelligence tools to adapt and evolve in the face of changing requirements. Meanwhile, informing agility denotes how swiftly and accurately the insights from business intelligence tools are communicated within the organization. Finally, organizational agility encapsulates a firm's holistic capacity to act on these insights. A symbiotic relationship between these three dimensions is pivotal for firms to harness business intelligence's power for enhanced agility.

On the other hand, Chen and Siau (2020) underscored that the benefits reaped from business intelligence capabilities are magnified when coupled with a robust IT infrastructure. This combination acts as a catalyst in enhancing a firm's agility, suggesting that mere business intelligence capabilities might be insufficient. Instead, the interplay of business intelligence and IT infrastructure collectively drives organizational agility.

Several previous studies highlighted the interaction among business intelligence, superior performance, and organizational agility. For example, Al Aqasrawi and Alafi (2022) probed the influence of business intelligence on strategic entrepreneurship, elucidating a significant mediating role of organizational agility. The research findings underscore that while business intelligence can offer firms insightful data-driven strategies, firm agility translates these strategies into entrepreneurial actions, subsequently enhancing performance. Also, Chen (2012) extended the business intelligence discourse by integrating IT infrastructure flexibility. The study, highlighting an "organizational agility perspective," posits that combining business intelligence and flexible IT infrastructure enhances a firm's competitive performance through improved agility. Additionally, Eisele et al. (2022) reinforce the idea that knowledge capabilities (such as those provided by business intelligence) can foster agility, subsequently influencing innovation and overall performance.

Meanwhile, Wamba (2022) expanded the spectrum by analyzing the impacts of artificial intelligence assimilation on firm performance. The results revealed that both organizational agility and customer agility mediate this relationship. The parallel drawn between artificial intelligence and business intelligence in terms of their capabilities and effects accentuates that advanced analytical tools, when complemented with agility, can significantly uplift performance metrics. Furthermore, Wanasida et al. (2021) found that business capabilities were crucial in supporting organizational agility and subsequent performance. Given that business intelligence is a foundational business capability, this study strengthens the argument for its indirect effect on performance through agility. Also, Felipe et al. (2020) probed the impact of information system capabilities on firm performance, emphasizing the roles of organizational agility. Bawono et al. (2022) focused on the influence of ambidextrous leadership mediated by firm agility. While leadership was a central theme, the study affirms that agility remains a critical conduit for translating various organizational capabilities (like business intelligence) into enhanced performance. Conclusively, there is a burgeoning consensus across the literature that while business intelligence capabilities are pivotal, organizational agility serves as the bridge, translating these capabilities into improved firm performance. This mediation manifests across diverse contexts, from strategic entrepreneurship to innovation and even during global adversities.

Nevertheless, the effectiveness of organizational agility and business intelligence capabilities is contingent upon several contextual factors. The effectiveness and congruence of these criteria depend on various elements, one of which is the prevailing leadership style within the business (Alzghoul et al., 2022). The focal point of this discussion is the moderating variable of knowledge-oriented leadership. Leaders who prioritize knowledge, exhibit a commitment to ongoing learning, are receptive to new information, and actively promote the sharing of knowledge may have a substantial impact on how agility affects the link between business intelligence and performance (Bahrami et al., 2022; Rafi et al., 2022; Yawised & Apasrawirote, 2022). Leaders of this style can either enhance or diminish the moderating influence of agility, thereby introducing an extra level of intricacy to an already complicated association.

Knowledge-oriented leadership emphasizes knowledge acquisition, dissemination, and application categorized under this leadership style (Birasnav et al., 2011). These leaders foster environments where learning and data-driven decision-making are at the forefront. Business intelligence capabilities have consistently proven transformative for organizations, especially regarding agility and responsiveness. A pivotal factor that can accentuate this transformation is leadership – specifically, knowledge-oriented leadership. Alzghoul et al. (2023a) underscored that knowledge-oriented leadership significantly nurtures the environment where creativity thrives. A key takeaway is the recognition of the power of knowledge-driven leadership in leveraging the organization's innate capabilities and fostering an environment conducive to higher performance.

Moreover, Kane et al. (2015) emphasized the role of leadership in harnessing the potential of digital tools, including business intelligence tools. The study argues that while technological capabilities matter, the leadership's strategic vision and orientation determine the extent to which these tools are leveraged. Nusrat et al. (2022) navigated the world of social media and its influence on creativity through knowledge discussion groups. The study highlighted the pivotal role of knowledge-oriented leadership in amplifying the positive effects of these variables. Notably, while the paper focused on creativity, its implications extend to other domains where leadership can play a moderating role in the utility of knowledge tools, potentially including business intelligence tools.

In business intelligence, technological tools are just one side of the coin. The other side is the organizational culture that uses these tools, and this culture is often defined by its leadership (Mikalef & Pateli, 2017). Knowledge-oriented leaders not only enhance the adoption of business intelligence tools but also ensure agility is ingrained in organizational processes (Alzghoul et al., 2023b). The blend of business intelligence capabilities and agility is thereby optimized under knowledge-oriented leadership. In essence, knowledge-oriented leadership is instrumental in shaping the organizational landscape. While Alzghoul et al. (2023a) and Nusrat et al. (2022) primarily underscore its effect on creativity, it can be hypothesized that such leadership

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would play a moderating role in harnessing business intelligence capabilities to bolster firm agility.

The objective of this study is to examine the relationship between business intelligence capabilities and firm performance in the high-tech sector in Jordan. Specifically, this paper seeks to investigate the mediating role of firm agility in this relationship. Furthermore, it investigates the moderating influence of knowledge-oriented leadership. The following hypotheses were formulated to enhance the comprehension of this association:

H1: Business intelligence capabilities influence firm agility.

H2: Firm agility influences firm performance.

H3: Firm agility mediates the relationship between business intelligence capabilities and firm performance.

H4: Knowledge-oriented leadership moderates the effect of business intelligence capabilities on firm agility.

2. METHODOLOGY

The study follows a quantitative paradigm, following the nature of the research questions and the objectives set forth. This approach allows for robust statistical analysis of the data and aids in testing the formulated research hypotheses more concretely. Specific criteria for participation were set to ensure a coherent and targeted data collection. Only firms endowed with business intelligence capabilities were identified and approached for participation. Within these firms, individuals holding supervisory roles were chosen for their insights into the company's operations and business intelligence utilization. Due to varied factors, such as organizational policies, financial considerations, voluntary declination, and network limitations, 34 firms spanning diverse sectors (IT and telecommunications, medical, e-commerce, banking, and finance) consented to be part of this research journey. The participants from these firms were from managerial, supervisory, and analytical roles, offering a balanced and comprehensive perspective. Embracing a random sampling technique, responses were solicited from the identified participants. This approach ensures an unbiased representation of the population and strengthens the external validity of the findings.

Grounded in established practices, the study instruments were initially translated into the local language, and all essential protocols for back-translation were meticulously followed. This ensured that the instrument retained its original meaning and construct validity, taking into account the linguistic nuances and cultural contexts. Multiple-item scales based on a seven-point Likert scale system were chosen to gauge all the variables in question. This form of measurement allows for capturing a wide range of responses and nuances in participants' opinions. Before the main data collection phase, a pilot survey was rolled out to a smaller group of 10 individuals. Feedback from this preliminary phase was invaluable and led to minor modifications to the survey instrument, ensuring clarity and reliability in the measures. The primary data collection yielded a substantial dataset from 237 respondents working in high-tech industries within Jordan. The data were then rigorously analyzed using statistical methods tailored for hypothesis testing and understanding intricate relationships between the variables.

2.1. Research instruments

The research instruments utilized in this study were chosen based on their relevance to the study's objectives and their proven efficacy in past research. The details of the selected instruments for each variable under study are as follows.

Business intelligence capabilities construct was gauged using a 6-item scale adapted from the seminal work of Cheng et al. (2020). The choice of this particular scale was motivated by its specificity to business intelligence capabilities and its validated consistency in measuring the construct across diverse settings.

Firm agility was evaluated through an 8-item scale inspired by Tallon and Pinsonneault (2011). This scale has been widely recognized for its comprehensive coverage of various facets of firm agility, ensuring a well-rounded understanding of the concept as it plays out in different organizations.

Capturing the essence of knowledge-oriented leadership requires a nuanced understanding of how leaders reward and encourage organizational knowledge management activities. To this end, an 8-item measure adapted from Donate and de Pablo (2015) was employed. Respondents were asked to rate how much their immediate superiors and organizational leaders emphasized fostering knowledge management activities in their daily operations.

Firm performance, especially in relation to its industry peers, is a multi-dimensional construct that warrants a robust measurement tool. In line with this requirement, a 7-item scale from a prior study by Chen et al. (2014) was chosen. Participants were prompted to rate their respective firm's performance compared to their industry competitors. This relative evaluation provides a more contextualized understanding of a firm's standing and success within its market domain.

3. RESULTS

The study obtained results by PLS-SEM software that is widely recommended over the contemporary empirical studies in many research areas (Hair et al., 2012). Moreover, the study performed this approach due to its ability to examine the model's validity and reliability and process the data through measurement and structural testing (Sarstedt et al., 2016). The study further applied this approach to investigate the mediating effect of firm agility and the moderation effect of knowledge-oriented leadership in the relationship between business intelligence capabilities and firm performance among high-tech industries. Applying the technique of PLS-SEM also offers a better understanding of the issue being addressed in this study. It handles some critical, complicated issues while analyzing the hypothesized research model through the different paths of the constructs (Hair et al., 2017).

3.1. Measurement model assessment

The process of the measurement model evaluation mainly requires some procedures that connect to the validation of the measure in order to ensure the measure's ability to gauge the research variables. The study ran essential analyses related to the factor loadings that reflect indicators' ability to represent the respective construct. In addition, the study is concerned with examining the required types of validity and reliability through values of Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's Alpha. The study shows the results associated with the reliability of the measure as an essential requirement of the analysis procedures. The results were gained by running the measurement model, and they are presented in Table 1, which revealed good and satisfactory levels with exceeding the minimum values of 0.50, 0.60, and 0.70, respectively (Fornell & Larcker, 1981). The convergent validity was also checked and calculated using AVE and CR. The findings of the measurement model demonstrated that all items were met and supported the concepts of reliability and validity. The first analysis of this model revealed that none of the indicators had factor loadings below 0.50, indicating satisfactory validity and reliability of the variables, which were measured to be above 0.50 and 0.70, respectively.

The study is also concerned with addressing the issue regarding validity using discriminant validity to assess and check the possibility of a high correlation between the latent constructs (Table 2). Henseler et al. (2015) stated that cross-loading analysis is used to examine this validity. This study also provided the critically needed outputs of Heterotrait-Monotrait (HTMT) that refer to the correlations of the variables (Table 3). The findings were gained during PLS algorithms run in PLS software, which calculate this validity through the square of the root of the AVE. The results did not find multicollinearity issues as the study construct correlation itself is more than its correlation with other constructs. The given results of the measurement model also confirmed acceptable outputs of this validity; HTMT met criteria (≤ 0.90), and this is considered good for the key analysis of the discriminant validity (Kline, 2015) and mean satisfactory results of the model.

3.2. Structural model assessment

Furthermore, the study also investigated the structural model as a second phase of PLS-SEM analysis procedures. In this phase, the study conducted this analysis to assess the path coefficients of the latent research constructs. Structural model assessment analysis procedures have been performed as a required process to test the research hypotheses. Hair et al. (2017) indicated that the

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Table 1. Descriptive statistics, validity, and reliability

Constructs	Items	Mean	SD	FL	Alpha	CR	AVE
Business intelligence capabilities	BI1	3.91	1.157	0.70	0.81	0.86	0.51
	BI2	3.84	1.071	0.69			
	BI3	3.80	1.175	0.68			
	BI4	3.91	1.161	0.77			
	BI5	3.82	1.250	0.76			
	BI6	4.06	1.078	0.69			
Firm performance	FP1	3.99	1.048	0.67	0.79	0.80	0.65
	FP2	3.85	1.180	0.68			
	FP3	3.84	1.162	0.65			
	FP4	3.86	1.193	0.67			
	FP5	3.76	1.209	0.66			
	FP6	3.77	1.128	0.68			
	FP7	3.79	1.123	0.64			
Firm agility	FA1	3.86	1.107	0.73	0.86	0.89	0.51
	FA2	3.86	1.166	0.75			
	FA3	3.84	1.222	0.78			
	FA4	3.78	1.176	0.69			
	FA5	3.88	1.141	0.78			
	FA6	3.87	1.132	0.56			
	FA7	3.77	1.186	0.69			
	FA8	3.83	1.292	0.69			
Knowledge-oriented leadership	KO1	3.84	1.167	0.84	0.94	0.95	0.70
	KO2	3.72	1.235	0.83			
	KO3	3.76	1.155	0.85			
	KO4	3.82	1.220	0.82			
	KO5	3.89	1.170	0.80			
	KO6	3.83	1.292	0.84			
	KO7	3.84	1.167	0.86			
	KO8	3.72	1.235	0.81			

Table 2. Fornell-Larcker criterion

	Variables	1	2	3	4
1	Knowledge-oriented leadership	0.836			
2	Business intelligence capabilities	0.061	0.717		
3	Firm performance	0.163	0.592	0.667	
4	Firm agility	0.058	0.784	0.723	0.714

Table 3. HTMT ratio

	Variables	1	2	3	4
1	Knowledge-oriented leadership				
2	Business intelligence capabilities	0.101			
3	Firm performance	0.243	0.720		
4	Firm agility	0.088	0.631	0.845	

key analysis procedures were applied with the respective results that assess the model's goodness. It depends on the essential tests that mainly include path estimates, corresponding and p-value, as well as consider the bootstrapping in PLS analysis. The results shown in Table 4 indicate that the business intelligence capabilities components had a statistically significant impact on firm agility ($p < 0.05$), supporting the first hypothesis (H1). Furthermore, firm agility was shown to have a statistically significant impact on firm performance ($p < 0.05$), supporting the second hypothesis (H2).

According to Hair et al. (2017), the study proposes including and examining an additional significant test in empirical studies. This test pertains

Table 4. Hypotheses testing

	Hypotheses	Beta	T-value	P-value	Result
H1	Business intelligence capabilities → Firm agility	0.784	26.018	0.000	Accepted
H2	Firm agility→ Firm performance	0.728	24.021	0.004	Accepted
	R^2 for firm performance		0.530		
	Q^2 for firm performance		0.218		

to the variance that explains the dependent variable, specifically the coefficient of determination (R2) and cross-validated redundancy (Q2). These tests are crucial in assessing and indicating the quality of the model for predictive purposes. The structural model results showed about 53% of the explained variance in firm performance. Due to these results, which ranged from zero to one, the data of the structural model showed a good explanation power (Shmueli et al., 2019). The model goodness is tested to check its predictability. Also, it addressed this issue and analyzed the predictive value of Q2 of the dependent variable; the result was more than zero, which confirmed this analysis.

3.3. Mediation analysis

This study examined firm agility as a mediator to predict its moderation mechanism between business intelligence capabilities and firm performance. Further, based on Baron and Kenny (1986), the key aspect of the indirect relations includes the third variable that has the mediation effect in an association between independent and dependent variables. Generally, the effect of the independent construct on the dependent construct is mediated by the third factor. Therefore, the method suggested by Preacher and Hayes (2008) indicated that the third factor is a variable that acts as a mediator. Once the independent variable significantly influences this factor, the independent also significantly influences the dependent variable, and the mediator significantly influences the dependent while the control is the independent variable. The mediating effect was examined by approach-specific indirect effect at PLS outputs. The results (Table 5) illustrated that firm agility has positively and significantly mediated the relation between business intelligence capabilities and firm performance ($p < 0.05$). Moreover, the results confirmed this role over the construct path, supporting the third hypothesis (H3).

3.4. Moderation analysis

This study examined knowledge-oriented leadership as a moderator to predict its moderation mechanism between business intelligence capabilities and firm agility. The results (Table 6) illustrated that knowledge-oriented leadership has positively and significantly moderated the relationship between business intelligence capabilities and firm agility ($p < 0.05$). Moreover, the results confirmed this role over the respective path, supporting the fourth hypothesis (H4).

4. DISCUSSION

The objective was to investigate the complex interrelationships among business intelligence capabilities, firm agility, firm performance, and the moderating influence of knowledge-oriented leadership. The results provide empirical evidence that substantiates the concept that the presence of business intelligence capabilities has a positive influence on the agility of an organization. The validation of the first hypothesis aligns with the findings of Chen and Siau (2020) and Kuilboer et al. (2016), who proposed that the interaction between

Table 5. Mediation analysis

	Hypotheses	Beta	T-value	P-value	Result
H3	Business intelligence capabilities→ Firm agility → Firm performance	0.571	15.120	0.000	Accepted

Table 6. Moderation analysis

	Hypotheses	Beta	T-value	P-value	Result
H4	Business intelligence capabilities→ Knowledge-oriented leadership→ Firm agility	0.155	2.199	0.001	Accepted

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business intelligence substantially impacts the degree of organizational agility. Moreover, the results align with the findings reported by Alzghoul et al. (2022), Cheng et al. (2020), and Khaddam et al. (2023). This assertion suggests that using business intelligence holds considerable potential in enhancing performance and efficacy within diverse organizational contexts.

The second hypothesis posits that the level of agility exhibited by a firm will exert a discernible impact on the firm's overall performance. The results of this study offer empirical substantiation for the hypothesis, positing a favorable association between firm agility and firm performance. The research findings are under the assertion by Nafei (2016), underscoring the significance of organizational agility in enhancing organizational outcomes. Cho et al. (2023) have expounded upon the paramount relevance of agility in achieving a firm's competitive advantage, particularly in global marketplaces where adaptation holds significant weight. The scholarly endeavor undertaken by Khalil et al. (2023) yields noteworthy insights into the ramifications of organizational agility on performance within a myriad of industries, encompassing the realm of hospitality. The findings underscore the growing importance of agility in exerting a profound impact on the performance of organizations.

The third hypothesis posits that firm agility will mediate the relationship between business intelligence capabilities and firm performance. Similarly, the results of this study offer empirical substantiation that bolsters the third hypothesis, indicating that the capacity of an organization to exhibit agility acts as an intermediary in the linkage between its business intelligence capabilities and performance. Furthermore, these findings exhibit consistency with Eisele et al. (2022) and Wamba (2022). Likewise, Al Aqasrawi and Alafi (2022) have contributed valuable empirical insights that shed light on the notion that the influence of business intelligence on organizational performance is predominantly contingent upon the degree of organizational agility.

The fourth hypothesis posits that knowledge-oriented leadership has a moderating role regarding the influence of business intelligence capabilities on firm agility. The empirical evidence suggests that the inclusion of knowledge-oriented leadership serves as a moderating variable in the correlation between business intelligence capabilities and an organization's agility. This proposition posits that leaders who emphasize prioritization, inspiration, and the cultivation of knowledge possess the capacity to influence the degree to which business intelligence capabilities affect an organization's agility. Moreover, this discovery elucidates the moderating role of knowledge-oriented leadership by Alzghoul et al. (2023a). This finding underscores the significance of leadership's involvement in effectively overseeing knowledge dynamics within various industries, as it directly affects the use of business intelligence capabilities. Furthermore, Nusrat et al. (2022) underscored the importance of knowledge-oriented leadership in managing the association between creativity and the advancement of business intelligence techniques. This implies that leadership focused on knowledge can affect the efficacy and influence of business intelligence.

Examining how firm agility affects the link between business intelligence and its performance and how knowledge-oriented leadership moderates this relationship adds to the debate within academia by providing fresh perspectives. The study has contributed to a comprehension of the factors that influence the success of businesses. It indicates that combining business intelligence capabilities, agility, and leadership results in favorable outcomes. The practical implications of this study are of considerable importance for high-tech businesses. Implementing business intelligence has transitioned from being a discretionary option to an essential need for organizations. This strategic investment in business intelligence has the potential not only to improve agility but also to achieve better performance. The study also highlights the significance of knowledge-oriented leadership in optimizing the benefits of business intelligence capabilities. Furthermore, fostering an organizational culture that prioritizes adaptation, innovation, and knowledge sharing is crucial. By incorporating these valuable perspectives, organizations may enhance the design of performance measures to include essential elements such as agility and knowledge leadership to increase their effectiveness and resilience.

CONCLUSION

This study aimed to get an in-depth understanding of the complex linkages between business intelligence capabilities, firm agility, firm performance, and the moderating role that knowledge-oriented leadership has in the high-tech sector. According to the findings, capabilities related to business intelligence play a critical part in fostering firm agility, which ultimately leads to improvements in overall firm performance. In addition, the study focused on the substantial impact that knowledge-oriented leadership has in shaping the effects of business intelligence on firm agility. These concepts have a substantial amount of relevance for businesses that want to demonstrate adaptability, innovation, and a competitive advantage in the high-technology industry, which is a dynamic sphere that is constantly evolving.

Although the paper offers valuable insights, it is crucial to recognize its inherent limits. The generalizability of the results may be limited due to the data being obtained from just 34 high-tech enterprises in Jordan. The cross-sectional design is limited in capturing temporal dynamics since it focuses on a given instant in time and may ignore the possibility of changing phenomena. Moreover, the emphasis on quantitative analysis may overlook the nuanced qualitative aspects associated with the adoption of business intelligence and the dynamics of leadership inside organizations. Future research endeavors could derive advantages from the broadening of sample variety, the adoption of longitudinal designs, and the integration of qualitative approaches. Investigating additional mediators or moderators within the link between business intelligence and performance across various industrial settings is a viable direction for future scholarly inquiry.

AUTHOR CONTRIBUTIONS

Conceptualization: Amro Alzghoul.
Data curation: Khaldoon Khawaldeh.
Formal analysis: Khaldoon Khawaldeh.
Investigation: Amro Alzghoul.
Methodology: Khaldoon Khawaldeh.
Project administration: Amro Alzghoul.
Resources: Khaldoon Khawaldeh.
Software: Khaldoon Khawaldeh.
Supervision: Amro Alzghoul.
Validation: Khaldoon Khawaldeh.
Visualization: Khaldoon Khawaldeh.
Writing – original draft: Khaldoon Khawaldeh, Amro Alzghoul.
Writing – review & editing: Amro Alzghoul.

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