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Business Intelligence Adoption and Strategic Performance in Jordan SMEs: An Integrated TOE–RBV Framework

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Abstract

This study explores the determinants and outcomes of Business Intelligence (BI) adoption in small and medium-sized enterprises (SMEs) in Jordan, drawing on the Technology–Organization–Environment (TOE) framework and the Resource-Based View (RBV) theory. It examines how technological, organizational, and environmental factors influence BI adoption, and how this adoption mediates the relationship between these factors and outcomes such as decision-making quality and organizational performance. The moderating role of perceived organizational support is also assessed. Data will be collected from 260 SME decision-makers using a structured questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). Results will reveal that all TOE dimensions significantly affect BI adoption, which positively influences both decision-making and performance. Moreover, perceived organizational support enhances the effect of BI adoption on outcomes. The study offers practical and theoretical insights for fostering effective BI integration in SMEs within emerging economies.

Keywords: Business Intelligence Adoption**,** SMEs Jordan, Strategic Performance**,** TOE Framework**,** Resource-Based View (RBV)

Introduction

In the current era of rapid digital transformation, small and medium-sized enterprises (SMEs) are increasingly compelled to adopt data-driven tools to remain competitive, resilient, and responsive (Bhuiyan et al., 2024; Hokmabadi et al., 2024; Raihan, 2024). Among such tools, Business Intelligence (BI) systems have emerged as critical for enhancing operational transparency, facilitating informed decision-making, and ultimately driving firm performance (Bhuiyan et al., 2024; Moussas et al., 2024). However, although the strategic importance of BI adoption is widely recognized, SMEs particularly those in developing countries like Jordan face multiple barriers to implementation, including limited technological infrastructure,

financial constraints, and lack of institutional support (Al Bqaeen & Md. Saad, 2025; Eboigbe et al., 2023; Raihan, 2024).

Given these challenges, a deeper understanding is required of the factors that facilitate or inhibit BI adoption within the SME context (Gudfinnsson & Strand, 2017). Technological readiness, such as the extent of process automation, compatibility with existing systems, and access to cloud technologies, plays a significant role in determining whether BI systems can be integrated effectively (Machireddy, 2024). Organizational factors, including financial readiness and leadership advocacy for BI, also shape the success of such initiatives. Simultaneously, external environmental conditions such as supportive digital policies and competitive BI pressures may compel firms to adopt data-driven solutions to maintain relevance in the marketplace (Akpe et al., 2022; Akter, 2025).

While previous research has explored some of these antecedents, studies have rarely examined them collectively through a unified theoretical lens (Eboigbe et al., 2023). Furthermore, there is limited empirical evidence regarding how BI adoption mediates the relationship between these contextual factors and organizational outcomes such as decision-making quality and performance (Jaradat et al., 2024). Although the adoption of BI is generally assumed to enhance decision quality and business results, this relationship may depend on whether employees perceive sufficient organizational support in navigating the complexities of digital transformation (Park & Mithas, 2020; Rouhani et al., 2016). Therefore, a moderating role of perceived organizational support is worth investigating to capture the full scope of organizational dynamics (Kim et al., 2016).

To address these research gaps, this study is grounded in the Technology Organization Environment (TOE) framework, which provides a comprehensive model for understanding innovation adoption in organizational settings (Al Hadwer et al., 2021a; Amini & Jahanbakhsh Javid, 2023). By applying TOE, the study categorizes the influencing factors into three domains: technological (process automation, system compatibility, and cloud computing), organizational (financial BI readiness and leadership advocacy), and environmental (digital policy support and competitive pressure)(Al Hadwer et al., 2021; Hoosen, 2023). Business Intelligence adoption is positioned as the mediating mechanism linking these contextual factors to outcomes, while perceived organizational support is examined as a moderator between BI adoption and both decision-making quality and organizational performance (Eboigbe et al., 2023; Jaradat et al., 2024). This integrated model contributes to the literature by offering a holistic view of BI adoption in SMEs in a developing economy, with practical implications for managers, policymakers, and system designers alike (Eboigbe et al., 2023; Moussas et al., 2024).

Literature Review and Hypotheses Development

The increasing demand for real-time, data-driven decisions has made Business Intelligence (BI) adoption a strategic imperative for organizations, particularly for small and medium-sized enterprises (SMEs) striving to remain competitive (Eboigbe et al., 2023; Jaradat et al., 2024). In understanding the complex process behind BI adoption and its outcomes, the Technology Organization Environment (TOE) framework and the Resource-Based View (RBV) theory offer two complementary theoretical lenses (Subramaniam et al., 2024). TOE explains how contextual factors drive technology adoption, whereas RBV clarifies how internal

resources and capabilities derived from BI systems can lead to sustained competitive advantage (Amini & Jahanbakhsh Javid, 2023; Sánchez et al., 2025a).

According to the TOE framework Tornatzky et al. (1990), an organization's decision to adopt a new technology is shaped by three primary contexts: technological, organizational, and environmental (Baker, 2011). From the technological context, SMEs must evaluate whether their existing systems support BI integration. Specifically, process automation, system compatibility, and cloud infrastructure are critical for enabling seamless adoption (Jain, 2024). When SMEs have already digitized processes and maintain interoperable systems, they are more likely to adopt and integrate BI effectively (Alkhalaf & Al-Tabbaa, 2024). Similarly, cloud-based platforms provide SMEs with scalable and cost-efficient BI access, reducing barriers to entry (Gudfinnsson & Strand, 2017). Therefore, firms with robust technological capabilities are better positioned to adopt BI tools(Akpe et al., 2022; Gudfinnsson & Strand, 2017).

From the organizational context, two factors play a vital role: financial BI readiness and leadership advocacy (Alhawamdeh et al., 2024a; Osuagwu, 2020). Financial readiness refers to the availability of necessary resources budget, personnel, infrastructure to support BI implementation (Chaqiqi & Nugroho, 2021). Given that BI systems often require substantial investment, especially in data integration and analytics, SMEs lacking financial readiness may delay or avoid adoption (Zheng & Khalid, 2022). In addition, leadership plays a pivotal role in shaping organizational culture and strategic direction (Jerab & Mabrouk, 2023). Leadership BI advocacy, defined as the extent to which top management promotes, prioritizes, and supports BI initiatives, is essential for overcoming resistance and ensuring alignment with business goals (Alhawamdeh et al., 2024b). Supportive leadership enhances employee buy-in and resource allocation, both of which are critical for BI success (Mgbame et al., 2022; Osuagwu, 2020).

The environmental context also exerts significant influence. Digital policy support, such as government incentives, legal frameworks, and training programs, can reduce uncertainty and promote technology diffusion(Shahadat et al., 2023). Furthermore, competitive BI pressure i.e., the perceived use of BI tools by rival firms may push SMEs to accelerate adoption to avoid falling behind. Therefore, external forces can act as catalysts, especially in markets where technological advancement determines survival (Alkhalaf & Al-Tabbaa, 2024; Bhuiyan et al., 2024; Gudfinnsson & Strand, 2017).

Although these TOE dimensions explain the conditions for BI adoption, they do not fully address how BI adoption leads to strategic benefits. Here, the Resource-Based View (RBV) offers a valuable extension (Salisu et al., 2021). According to RBV Barney (1991), firms gain competitive advantage by developing resources that are valuable, rare, inimitable, and non-substitutable. BI systems, when successfully adopted and embedded, constitute such a resource. BI enables firms to collect, process, and interpret vast amounts of data, leading to enhanced decision-making quality and improved organizational performance (Adewusi et al., 2024a). However, these outcomes depend on the firm's ability to transform BI capabilities into actionable insights and strategic decisions (Adewusi et al., 2024a). Thus, BI adoption functions as a mediating mechanism through which contextual factors contribute to competitive outcomes (Adewusi et al., 2024a; Eboigbe et al., 2023).

Despite the expected benefits of BI, the degree to which it improves performance may vary across firms (Machireddy, 2024). This variation suggests the existence of contingent conditions that influence the strength of the BI performance relationship. One such condition is Perceived Organizational Support (POS) (Amayreh & Arshad, 2024, 2025), which refers to employees' belief that their organization values their contributions and supports their efforts (Amayreh & Arshad, 2025). When employees feel supported, they are more likely to engage proactively with BI tools, leverage data insights, and contribute to higher decision-making quality (Gade, 2021). Therefore, POS is expected to **moderate** the relationship between BI adoption and both decision-making and performance, strengthening these links in organizations where employees perceive strong institutional support (Kusi et al., 2021).

Theoretical framework

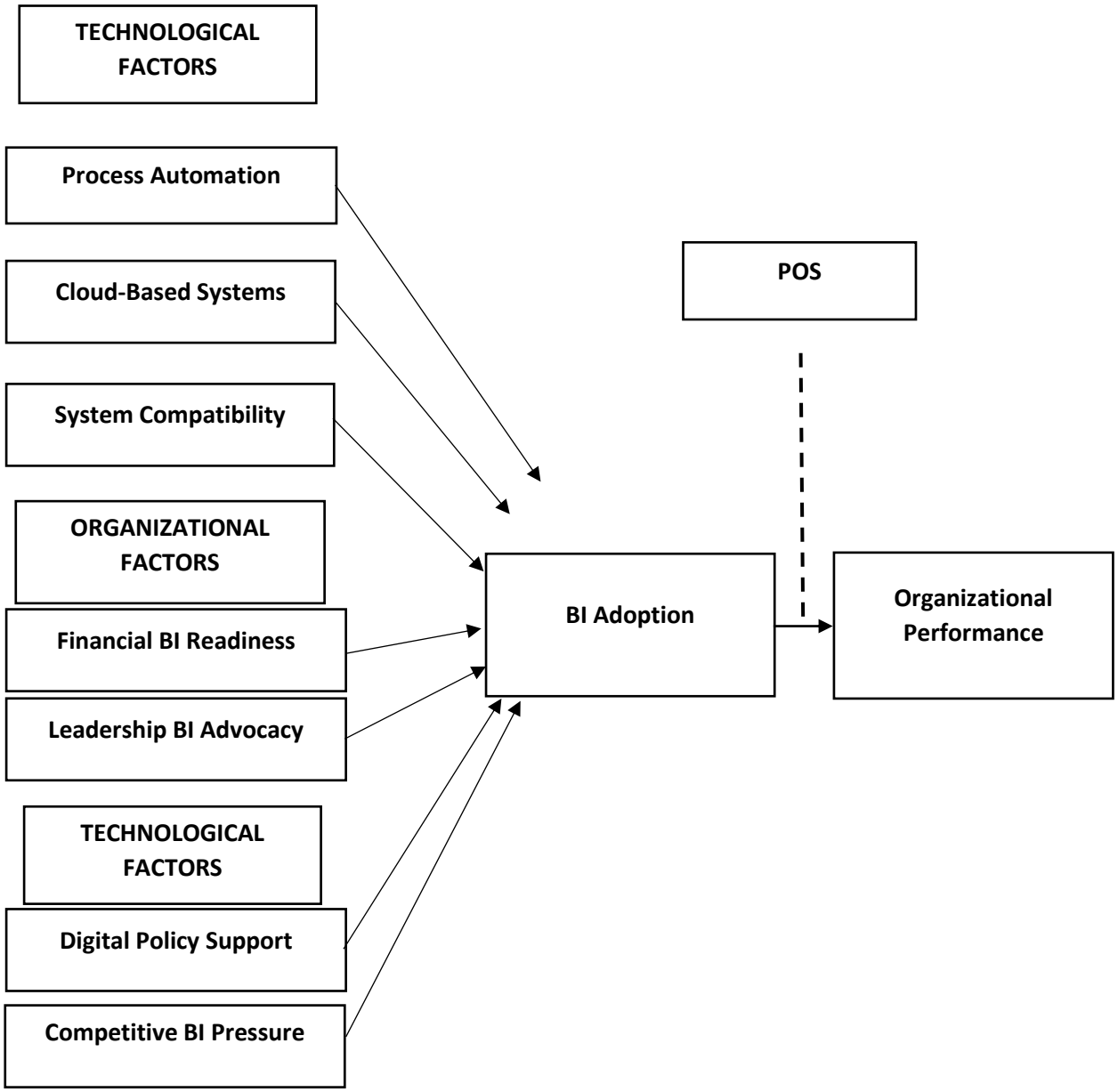

Figure 1 Theoretical framework

Technological Factors and BI Adoption

From the TOE perspective, technological factors are fundamental in shaping how an organization perceives the ease and benefits of adopting innovation (Stjepić et al., 2021). In the context of BI, process automation streamlines data collection and processing, reducing manual input and enabling real-time insights, which enhances the attractiveness of BI tools (Zheng & Khalid, 2022). Similarly, cloud-based systems lower infrastructural barriers, offer scalability, and reduce upfront investment costs, making BI more accessible for SMEs (Alkhalaf & Al-Tabbaa, 2024; Mgbame et al., 2022). Moreover, system compatibility ensures that new BI systems can seamlessly integrate with existing applications and databases, thereby minimizing disruption and increasing user acceptance. Therefore, these technological enablers are expected to exert a positive influence on BI adoption among SMEs (Mady et al., 2023; Stjepić et al., 2021a).

H1: Process automation has a positive effect on BI adoption.
H2: Cloud-based systems have a positive effect on BI adoption.
H3: System compatibility has a positive effect on BI adoption.

Organizational Factors and BI Adoption

Organizational readiness is another critical dimension in the TOE framework, particularly for SMEs that often operate with constrained resources (Sánchez et al., 2025b). Financial BI readiness reflects the availability of adequate funding and technological infrastructure needed to implement and sustain BI solutions (Bargshady et al., 2014; Hidayanto et al., 2012). Without sufficient financial preparation, even technologically sound solutions may not be adopted (Hendrawan et al., 2024). Furthermore, leadership advocacy for BI reflects top management's commitment to digital transformation (McCarthy et al., 2022). When leaders promote BI as a strategic priority, they influence organizational culture, allocate resources effectively, and motivate employees to embrace change (Alhawamdeh et al., 2024a). These organizational factors serve as internal facilitators, enhancing the likelihood of BI adoption.
H4: Financial BI readiness has a positive effect on BI adoption.
H5: Leadership BI advocacy has a positive effect on BI adoption.

Environmental Factors and BI Adoption

The environmental dimension of TOE focuses on external pressures and institutional support that influence organizational decisions (Xu et al., 2025). In emerging economies like Jordan, the presence of supportive digital policies including regulatory incentives, data governance frameworks, and public funding can reduce the perceived risk associated with technology adoption (Ciborra & Navarra, 2005; Putrevu & Mertzanis, 2024). In addition, competitive BI pressure, defined as the influence exerted by rivals already leveraging BI tools, can stimulate adoption through benchmarking and fear of falling behind (Subramaniam et al., 2023). When competitors gain efficiency and insight through BI, other firms may adopt similar tools to retain market relevance (Tsiu et al., 2025). As such, these environmental drivers are expected to positively influence BI adoption decisions.
H6: Digital policy support has a positive effect on BI adoption.
H7: Competitive BI pressure has a positive effect on BI adoption.

BI Adoption and Organizational Performance

Beyond adoption itself, it is essential to understand how BI use translates into tangible outcomes (Adewusi et al., 2024). Rooted in the RBV theory, BI adoption is conceptualized as

a strategic resource that enhances organizational intelligence and agility (Jiménez-Partearroyo & Medina-López, 2024). When effectively implemented, BI tools support superior decision-making by providing timely, accurate, and comprehensive data, thus improving decision-making quality (Adewusi et al., 2024; Balogun et al., 2021). Additionally, BI allows firms to optimize resource allocation, forecast trends, and improve operational efficiency, contributing to better overall performance (Adekunle et al., 2021). Furthermore, the mediating role of BI adoption explains how contextual drivers from the TOE framework indirectly influence organizational outcomes through enhanced analytics capability, aligning both theoretical perspectives (Jais et al., 2024; Mohammed et al., 2024).

H8: BI adoption has a positive effect on decision-making quality.

H9: BI adoption has a positive effect on organizational performance.

H10: BI adoption mediates the relationship between TOE factors and both decision-making quality and organizational performance.

Moderating Role of Perceived Organizational Support

Although BI adoption holds potential for significant organizational benefits, its actual impact may depend on the level of internal support perceived by employees (Stjepić et al., 2021; Trieu, 2023). Perceived Organizational Support (POS) reflects the degree to which employees believe their organization values their contributions and cares about their well-being (Duong et al., 2024). High POS encourages proactive behavior, resilience to change, and increased engagement with technology, which can amplify the benefits of BI systems (Islam et al., 2024). Under RBV, POS enhances the firm's human capital and capability utilization, allowing organizations to extract greater value from BI investments. Therefore, POS is posited to strengthen the relationship between BI adoption and its performance-related outcomes (Mollah et al., 2025).

H11: Perceived organizational support moderates the relationship between BI adoption and decision-making quality, such that the relationship is stronger when POS is high.

H12: Perceived organizational support moderates the relationship between BI adoption and organizational performance, such that the relationship is stronger when POS is high.

Contributions and Conclusions

Theoretical Contributions

This study contributes meaningfully to the literature on Business Intelligence (BI) adoption by integrating the Technology Organization Environment (TOE) framework and the Resource-Based View (RBV) theory within the context of small and medium-sized enterprises (SMEs) in Jordan. While TOE provides a comprehensive lens to examine the contextual antecedents of BI adoption, RBV offers an explanatory basis for how BI functions as a valuable internal resource that enhances decision-making and organizational performance (Amayreh et al.,2025). By testing BI adoption as a mediating mechanism and perceived organizational support as a moderator, the study extends both theories and demonstrates how internal resources and external contexts collectively shape digital transformation outcomes in SMEs. Furthermore, the research responds to calls for more empirical work on BI in developing economies and underexplored sectors, addressing a notable gap in the existing body of knowledge.

Practical Contributions

The findings of this study offer valuable insights for SME managers, IT professionals, and policy makers in emerging markets. First, the results highlight the importance of technological readiness, such as process automation and system compatibility, in laying the groundwork for successful BI integration. Second, they underscore the role of organizational leadership and financial preparation in fostering a supportive environment for adoption. Third, external enablers, including government digital policies and competitive pressure, are shown to serve as catalysts for technology adoption. Importantly, the study shows that simply adopting BI is not sufficient employee perceptions of organizational support significantly influence the extent to which BI translates into improved decision-making and performance. Managers are therefore encouraged to not only invest in BI infrastructure but also to build a culture of support, training, and inclusion to maximize the return on their BI investments.

Limitations and Future Research

Despite its contributions, this study is not without limitations. First, it employed a cross-sectional design, which limits the ability to draw causal inferences. Future studies may consider longitudinal research designs to capture changes in BI adoption and performance outcomes over time. Second, data were collected only from SMEs in Jordan, which may limit the generalizability of findings to other sectors or regions. Future research could expand the model to include large enterprises or conduct cross-country comparisons to explore contextual differences. Additionally, while this study focused on perceived organizational support as a moderator, future studies may incorporate other psychological or structural moderators, such as organizational learning culture or data literacy levels.

Conclusions

In conclusion, this study proposes and empirically validates an integrated model that elucidates how technological, organizational, and environmental factors collectively shape the adoption of Business Intelligence (BI) systems in small and medium-sized enterprises (SMEs), and how such adoption subsequently enhances decision-making quality and organizational performance. Drawing upon the Technology–Organization–Environment (TOE) framework and the Resource-Based View (RBV) theory, the research confirms that the successful implementation of BI is not solely a technological matter but rather a multidimensional process influenced by internal readiness, leadership commitment, external pressures, and environmental support structures. Technological factors such as process automation, cloud systems, and system compatibility act as key enablers, while organizational factors, including financial preparedness and leadership advocacy, significantly boost BI readiness. Moreover, external drivers such as digital policy support and competitive BI pressure further accelerate adoption efforts. Importantly, the study reinforces that BI adoption acts as a strategic organizational capability as conceptualized by RBV that translates contextual strengths into tangible performance outcomes. Furthermore, the moderating role of perceived organizational support highlights the importance of creating a workplace culture that values employee involvement and facilitates the effective use of digital tools. These insights underscore the need for SME leaders to adopt a holistic strategy that integrates technology with internal support mechanisms to fully realize the benefits of BI. As the business landscape continues to evolve with increasing reliance on data-driven decision-making, SMEs in emerging economies must recognize that the true value of BI lies not only in its acquisition but in its alignment with organizational culture, capabilities, and strategic

intent. By doing so, SMEs can position themselves for sustainable innovation, competitive advantage, and long-term performance gains in an increasingly dynamic and digitally mediated marketplace.

This study contributes significantly to both theory and practice. Theoretically, it advances the literature by bridging the TOE and RBV frameworks to provide a comprehensive lens through which BI adoption in SMEs can be better understood. While previous studies often examined these perspectives in isolation, this integrative approach captures the interplay between contextual enablers and internal strategic resources, offering a more nuanced understanding of BI implementation. Practically, the study offers actionable guidance for SME decision-makers, policymakers, and digital solution providers in emerging economies by identifying critical levers that drive successful BI adoption. It emphasizes the importance of aligning technological investments with organizational readiness and external environmental cues, thereby offering a roadmap for SMEs seeking to leverage BI for enhanced agility, innovation, and performance.

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