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Business Intelligence Competencies Efficiency in Enhancing Supply Chain Performance: A Review of Supply Chain Integration and Top Management Commitment

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Abstract

Business Intelligence (BI) competencies function as essential performance tools for supply chain management because industries focus on delivering efficiency and integration and rapid responses for competitive edge. The food manufacturing sector uses BI tools for data-based decision-making to achieve better operational performance and develop united supply chains. The wider acceptance of BI potential exists yet its actual implementation continues to stay restricted throughout developing economies because these economies poorly demonstrate technical skills and management capabilities alongside cultural understanding. BI adoption faces major obstacles because companies have fragmented supply chains and weak commitment from top management thus creating an important research gap. The review analyzes existing studies about BI competencies and supply chain performance improvement through their relationship to supply chain integration and top management commitment. Business intelligence capabilities at a high-level lead organization to achieve better decisions along with improved supplier relationships and operational efficiency. Top management commitment and supply chain integration play essential roles as performance improvement connectors between BI adoption and performance outcomes. Future work needs to study the environmental elements that affect BI adoption in developing economies as well as investigate new technologies and create frameworks to develop supply chain managers and improve cultural awareness.

Keywords: Business Intelligence (BI) Competencies, Supply Chain Performance, Supply Chain Integration, Top Management Commitment

Introduction

Digital technology creation has totally changed global supply chains thus driving organizations to implement data-oriented solutions for boosting performance and sustainability while improving quick response abilities. A set of crucial competencies named Business Intelligence (BI) comprises three domains including technical skills and managerial abilities in addition to cultural competencies that drive supply chain performance (Jiménez-

Partearroyo, & Medina-López, 2024). Retail organizations achieve strategic decision-making through BI by processing massive data volumes to extract valuable insights from initial information sources. Food manufacturers who operate under demanding conditions caused by changing market demands and supply chain restrictions alongside scarce resources must harness BI competencies as a critical approach to achieve operational excellence and market leadership (Khan, et al., 2022). A large number of companies in emerging economies face difficulties with BI adoption because of their limited supply chain integration and technological infrastructure and insufficient top executive support. The assessment of supply chain performance deals with multiple dimensions to measure how well supply chain activities achieve organizational targets (Fu, et al., 2022). The supply chain assessment system comprises cost efficiency and responsiveness together with flexibility alongside quality and sustainability which drive business success for firms working in competitive resource-limited conditions.

BI technology adoption results in better performance measurements across all these areas through instantaneous tracking capabilities and computational forecasting systems and automated workflow solutions (Bussa, 2023). For successful Business Intelligence implementation companies need a high level of supply chain integration that requires both partners to work smoothly together. The implementation of supply chain integration enables partners to exchange information which produces better visibility thus diminishing operational inefficiencies that eventually improves the quality of business decisions and organizational performance (Abdallah, et al., 2021). Research on BI needs to remain a top priority to help developing economy firms overcome integration barriers because numerous companies in these economies struggle with such barriers. Several gaps remain within the expanding literature about BI and supply chain performance. The analysis of developing market BI competency needs to develop specific requirements because current research demonstrates BI enhances supply chain efficiency yet it lacks examination of these competency needs (Hatamlah, et al., 2023).

Research requires further investigation about supply chain integration acting as a mediator between BI competencies and their resulting performance outcomes. The realization of BI's complete advantages requires research to establish methods which organizations can use technology and human capital investments to enhance their integration capabilities. Not much research exists regarding top management dedication as a driver to help organizations adopt BI systems. Leadership support plays an essential role in changing employee resistance to new initiatives while obtaining needed resources and building an organization based on data (Rehman, et al., 2021). When managers lack deep commitment to BI projects these initiatives cannot create significant improvements in supply chain performance results. The study addresses these knowledge gaps through analyzing (1) What influence BI competencies have on supply chain performance and (2) What role supply chain integration plays between BI competencies and supply chain performance while (3) Evaluating how top management commitment affects this relationship. Supply chain integration operates as a mechanism to explain how BI competencies influence supply chain performance. The study evaluates what effect top management commitment has on BI competencies' relationship with supply chain performance results.

The study compares recent scholarly findings with the goal of creating a detailed description of the systems by which BI competencies enhance supply chain execution and the ways organizational elements modify their operational success. The present study adds value to current research through multiple novel contributions. The research expands existing knowledge by studying how BI competencies enhance supply chain results especially within the food manufacturing industry. This review brings attention to developing market challenges which counter BI adoption because firms in these markets face technological barriers alongside fragmented supply chains and shortage of managerial proficiency (Thirumal, et al., 2024). Analyzing supply chain integration helps this review show how businesses can utilize BI to develop improved interorganizational data exchange and collaborative practices between supply chain partners. The current approach provides essential value to industries which depend on elaborate supplier systems combined with complex logistical processes. Thirdly this review explains how top management commitment acts as a moderator to highlight the essential role of leadership in advancing digital transformation projects. Both researchers and practitioners need to understand how organizational leadership creates a supportive BI adoption environment because organizational inertia frequently causes BI project failures (Paradza, & Daramola, 2021).

This paper uses the following organizational pattern. This section offers an extensive assessment of academic works related to BI competencies combined with supply chain performance together with supply chain integration dynamics. A review of novel empirical research leads to the discovery of important areas where additional studies will bring value to the field. This segment demonstrates how BI competencies promote supply chain performance through described mechanisms while showing factors impacting their operational success. The discussion section analyzes this research within existing theoretical foundations which presents organizations with practical suggestions for developing improved BI capabilities. In the last part of this work a summary details important points discovered while examining database technology limitations and suggests new research opportunities.

Literature Review

Business Intelligence (BI) Competencies

Business Intelligence (BI) competencies comprise the organizational capabilities for efficient data collection and analysis along with utilization for better decision-making. The developed competencies help companies utilize data insights for operational optimization and resource allocation improvement and better strategic planning (Faúndez, & de la Fuente-Mella, 2022). An organization's BI competencies help supply chain management by enhancing transparency between partners while decreasing unpredictable situations and encouraging mutual partnership. Organizations need to develop strong BI competencies because global supply chains are becoming more complex and volatile (Al-edenat, & Alhawamdeh, 2022) for boosting responsiveness and agility and improving business competitiveness. BI competencies encompass three critical dimensions: technical, managerial, and cultural. The three elements which make up technical competency consist of managing data, conducting analytics and mastering visualization tools. The ability of organizations with solid technical expertise to process massive amounts of data brings them real-time decision capacity which enables predictive analytics to foresee supply chain interruptions (Shittu, et al., 2024).

Leaderships possessing managerial competency demonstrate their capability for effectively matching BI projects to business goals and managing resource allocations as well as developing an organizational culture that makes decisions based on data evidence. The implementation of BI tools through effective management results in their integration across supply chain operations which leads to performance enhancement (Hamad, et al., 2021). The ability of organizations to develop environments that will support BI adoption constitutes cultural competency. Organizations need to defeat opposition to change while promoting information exchange throughout their departments and supply chain relations (Yadav et al., 2023). Supply chain performance shows clear results from BI competency applications during activities regarding demand forecasting and inventory optimization and supplier relationship management processes. The implementation of business information tools enables organizations to improve supply chain connection along with cost minimization and service delivery enhancement (Olszak, 2022). The benefits of BI include monitoring waste reduction and energy efficiency and carbon footprint minimization which helps organizations establish sustainable initiatives. As digital transformation reshapes global supply chains, organizations that develop robust BI competencies will be better positioned to navigate uncertainty and drive long-term success.

Supply Chain Performance

Organizational success depends heavily on supply chain performance (SCP) since it evaluates supply chain operational efficiency and effectiveness in reaching tactical goals. The evaluation of SCP through firms depends on key performance indicators (KPIs) which evaluate cost efficiency as well as responsiveness and flexibility alongside quality and sustainability (Unhelkar, et al., 2022). The primary goal of cost efficiency is to minimize operational costs together with maintaining service quality as well as optimizing inventory levels and decreasing waste. The measurement of supply chain responsiveness durches the swift ability to handle changes in market situations as well as demand patterns and operational disruptions and proves essential for industries experiencing significant volatility. The ability of a firm to modify production schedules and switch suppliers together with adjusting logistics networks for responding to changing market conditions defines flexibility (Qader, et al., 2022). Supply chains achieve quality and reliability when they produce flawless products on schedule according to assessment criteria and sustainability examines environmental aspects along with social responsibility during supply chain operations including waste management and sustainable resource sourcing (Perano, et al., 2023).

BI functions as a key enhancer of SCP by delivering exact information and predictive analysis through automated systems that direct better business choices. Business Intelligence tools provide organizations with capabilities to process large data quantities from multiple sources which leads to improved predictive forecasting capabilities as well as optimized inventory management and risk identification (Khan, & Emon, 2025). The implementation of BI analytics within supply chain operations allows businesses to improve their supply network transparency and supplier-customer relationships and decrease operational wastage (Feizabadi, 2022). Supply chain organizations can achieve sustainability goals through BI because this technology tracks carbon emissions and energy usage and waste production which leads to implementing sustainable supply chain practices. Using BI technologies in increasingly digitalized supply chains produces crucial advantages for agility and resilience and performance quality during periods of fast-market evolution.

Supply Chain Integration

Supply chain integration (SCI) means strategic business activities between supply chain partners to coordinate processes and information and resources for better operational efficiency. The approach requires proper alignment of internal business operations together with supplier collaboration to develop superior connectivity between supply chain participants for enhanced efficiency and cost reduction and response speed (Tiwari, 2021). Teltec and the current business landscape demand effective Supply Chain Integration as organizations need to stay agile enough to respond to market changes and technological progress and altering customer requirements. Supply chain activities which function as a single integrated system allow businesses to improve data transmission and eliminate waste and strengthen supply chain stability which establishes SCI as a vital component for enduring business achievement (Shukor, et al., 2021). Supply chain integration produces major changes in performance due to its ability to conduct real-time strategic decisions and enhance operational efficiency while improving visibility throughout the system. Internal integration provides an organization with an internal framework that helps departments coordinate their activities to eliminate production delays while optimizing distribution processes. The integration with suppliers helps businesses build stable partner relationships which results in quick material sourcing along with reduced business interruptions. The integration of customers enables businesses to better predict customer needs thus improving inventory administration which results in higher service quality and better customer satisfaction (Alzoubi, et al., 2022).

SCI levels in organizations lead to flexibility and operational cost reductions and sustainability improvements since integrated systems provide improved resource efficiency and waste control (Cui, et al., 2023). The Business Intelligence competencies of an organization help enable Supply Chain Integration by providing necessary data insights which promote better alignment between departments. Using BI tools companies can track supply chain operations in real time and predict customer demands and automate their inventory management decisions (Siagian, et al., 2021). Organizations that possess strong BI capabilities enable the smooth integration of their supply chains through better communication and increased transparency and developed trust relationships among supply chain partners. By leveraging BI-driven insights, firms can achieve higher levels of SCI, leading to improved supply chain performance and competitive advantage in an increasingly digital and complex business landscape (Kamble, et al., 2023).

Top Management Commitment

The adoption of Business Intelligence (BI) and its effects on supply chain performance heavily depend on top management's devoted support for implementation. Leadership backing enables organizations to dedicate needed resources while building data-focused organization culture and BI incorporation into their strategic planning (Rahman, et al., 2023). Strong TMC positions organizations to overcome change resistance because their leadership conducts digital transformation initiatives while promoting cross-team partnership along with defining performance targets. Executive support stands essential for BI implementation because it provides both strategic guidance and financial backing to develop improved supply chain performance (Kitsis, & Chen, 2021). Organizations under well-led leadership achieve BI-driven performance gains which improve real-time choices alongside supply chain logistics

and provider interaction thus enabling operational excellence along with reduced expenses and satisfied customers (Kitsis, & Chen, 2021).

The supportive link between TMC influence on BI adoption and supply chain performance affirmations various theoretical models. Business intelligence serves as a strategic asset according to the Resource-Based View (RBV) theory because firms operated by strong leaders transform their data-driven insights into competitive market benefits (Bhatia, & Jakhar, 2021). According to the Dynamic Capabilities View (DCV) top management serves as an organizational agility enabler when they encourage technological flexibility and sustain continuous learning (Purnomo, et al., 2024). The role of TMC depends on transformational leadership theory since visionary leaders innovate through BI tools which enable employees to enhance supply chain processes (Haldorai, et al., 2022). As per these views leadership dedication functions as an essential power source to enable integration between BI-based supply chains because data analytics leads to practical process enhancements. Forward-thinking organizational leadership teams will secure better BI implementation results in addition to long-term operational strength and market leadership through digital supply chain changes.

Theoretical Foundations

This research draws its theoretical basis from Resource-Based View (RBV) and Dynamic Capabilities View (DCV) which help firms evaluate their internal competencies together with external collaborations to advance supply chain performance. A firm uses resources that demonstrate value wealth and rarity together with imitability barriers and absence of substitution options to secure its competitive standing (Barney, 1991). In this framework Business Intelligence (BI) competencies with their technical and managerial as well as cultural aspects function as distinctive resources which help firms improve their operational efficiency and decision-making abilities (Shittu, et al., 2024). Business organizations achieve better supply chain results when they integrate data-driven analytics with predictive capabilities since it results in optimal logistics management along with procurement and customer relationship enhancements. According to DCV schools of thought (Teece et al., 1997) organizations need to develop continuous adaptation and transformation skills for their capabilities across dynamic environments.

Supply Chain Integration (SCI) operates as a strategic organizational capacity which allows businesses to unify corporate functions between suppliers and partners and clients to deliver efficient information-sharing systems while improving operational responsiveness (Mathrani, 2021). The research framework in Figure 1 displayed in this study shows how BI competencies (technical, managerial, and cultural) interact with supply chain performance through the mediating effects of SCI. Top Management Commitment serves as a moderating factor that preserves these three relationships while helping both BI and SCI attain strategic alignment together with appropriate resource distribution. Companies with proficient dynamic capabilities achieve superior market performance through their ability to unite technological know-how and management capabilities for supply chain management (Díaz-Arancibia, et al., 2024). The model developed from RBV (Resource-Based View) and DCV (Dynamic Capabilities View) framework offers an exhaustive perspective regarding BI competencies and their effects on supply chain performance through SCI (Supply Chain Integration) systems.

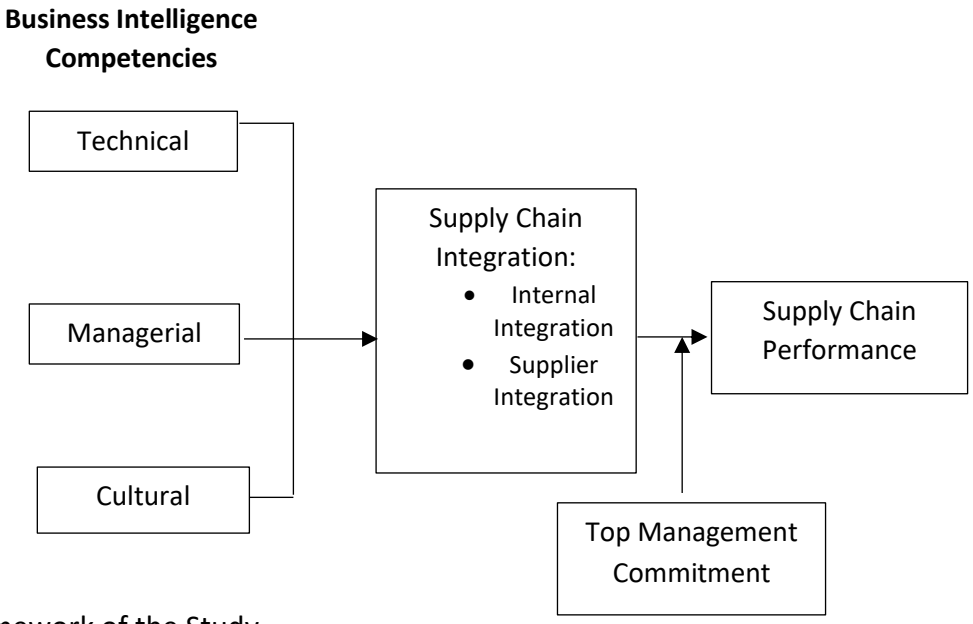

Figure 1 Framework of the Study

Review of Major Existing Studies and Hypotheses Development

Business Intelligence (BI) Competencies and Supply Chain Performance

Current studies demonstrate how Business Intelligence (BI) competencies have become crucial for supply chain performance improvements through better decision making with less operational inefficiencies and better operational agility. Businesses that have robust BI programs can utilize instant data and automated prediction models to improve their supply chain functions (Jafari, et al., 2023). BI tools make KPIs more effective by providing valuable information that enhances visibility into supply chains and minimizes risks while improving cost efficiency and responsiveness and sustainability and flexibility (Wang, et al., 2022). BI adoption remains challenging for firms in developing economies because of technological barriers and shortages of expert personnel as well as difficult supply chain relationships according to Chen, and Lin, (2021). Studies reveal that supply chain optimization depends on BI competencies which consist of three dimensions: technical competency, managerial competency and cultural competency (Mbima, & Tetteh, 2023). The proper management of data depends on technical competency while managerial competency links BI strategies with organizational targets and cultural competency generates supply chain network collaboration. BI capabilities at an advanced level have proven to drive better supplier relationships and better inventory control and demand prediction which enhances supply chain operational effectiveness according to Pancić, et al., (2023). The existing research shows a need for more investigation about optimal methods for BI implementation in organizations with limited resources. The relationship between BI competencies and supply chain performance needs thorough comprehension for developing strategies which enable organizations to excel operationally and remain competitive over the long term. Therefore, this study developed following hypothesis:

H1a: There is significant and positive effect of technical Business Intelligence on Supply Chain Performance in the Jordanian Food Manufacturing Industry.

H1b: There is significant and positive effect of managerial Business Intelligence on Supply Chain Performance in the Jordanian Food Manufacturing Industry.

H1c: There is significant and positive effect of cultural Business Intelligence on Supply Chain Performance in the Jordanian Food Manufacturing Industry.

Business Intelligence (BI) Competencies and Supply Chain Integration

The study demonstrates that Business Intelligence (BI) competencies function as primary elements in creating supply chain integration (SCI). BI-capable organizations achieve superior internal and external supply chain collaboration through data analytics that enables continuous decision-making and complete process supervision and coordination (Jafari, et al., 2023). BI tools allow organizations to integrate their supply chain processes effectively which creates smooth communication links between suppliers and customers and manufacturers (Zafary, 2020). The application of technical competencies such as data analytics and machine learning through BI aids supply chain activity synchronization which in turn lowers operational costs and minimizes business threats. The strategic alignment of BI-derived insights depends on managerial competencies to maintain essential supply chain targets and encourage a decision-making environment based on collaborative insights (Mathrani, 2021). By establishing cultural competencies SCI functions better because they help develop trust while enabling stakeholders to share knowledge and work across departments. Numerous organizations face difficulties in BI adoption because they confront both technological obstacles and internal resistance according to Díaz-Arancibia, et al., (2024). Organizations need to establish training initiatives together with technological resources along with senior level backing in order to surpass these implementation obstacles. Research shows a direct association between BI competencies and SCI yet additional exploration of industrial-specific barriers and maximization strategies for BI supply chain integration is needed. Hence, this study hypothesizes that:

$H2a_1$: There is a positive and significant effect of technical competency, on internal integration in the Jordanian Food Manufacturing Industry

$H2a_2$: There is a positive and significant effect of technical competency, on supplier integration in the Jordanian Food Manufacturing Industry

$H2b_1$: There is a positive and significant effect of managerial competency on internal integration in the Jordanian Food Manufacturing Industry

$H2b_2$: There is a positive and significant effect of managerial competency on supplier integration in the Jordanian Food Manufacturing Industry

$H2c_1$: There is a positive and significant effect of cultural competency on internal integration in the Jordanian Food Manufacturing Industry

$H2c_2$: There is a positive and significant effect of cultural competency on supplier integration in the Jordanian Food Manufacturing Industry

Supply Chain Integration and Supply Chain Performance

Many researchese into the connection between supply chain integration (SCI) and supply chain performance (SCP) has shown that extensive integration brings better operational effectiveness and flexible responsiveness along with improved competitiveness (Munir, et al., 2020). Through SCI organization processes become better aligned which allows complete flow of information and resources throughout the supply chain (Tan, et al., 2023). The integration of supply chain operations creates multiple benefits for companies by providing reduced operational expenses and better market outlooks and improved reaction to market changes. Multiple studies have found that Supply Chain Integration consists mainly of three main components which include internal integration and supplier integration

together with customer integration. Inside-the-company coordination among departments becomes better when internal integration functions as an organizational basis (Kamble, et al., 2023). Supplier integration builds improved strategic alliances with suppliers and results in stronger collaboration which reduces product delivery time and produces increased quality materials. Customer integration allows firms to synchronize operational activities with market requirements thus delivering superior service quality and achieving better customer satisfaction (Abdelilah, et al., 2023). Modern research shows that supply chains deal with decentralization and technological obstacles and refusal to share information mainly occurring within developing countries according to Jiang, et al., (2024). Research shows that while SCI functions as the primary force behind SCP organizations need to dedicate resources to technology development and leadership backing as well as data-driven approaches to achieve maximum benefits. Next-generation scientific research should examine how artificial intelligence along with blockchain technology can incorporate in supply chain management to achieve better supply chain results. Thus, this study hypothesizes that:

H3a: There is a positive and significant effect of internal integration on supply chain performance in the Jordanian Food Manufacturing Industry?

H3b: There is a positive and significant effect of internal integration on supply chain performance in the Jordanian Food Manufacturing Industry?

Supply Chain Integration as a Mediator

Studies have investigated how supply chain integration acts as a mediating factor to link Business Intelligence competencies with supply chain performance. Study results demonstrate that Business Intelligence competencies boost decision quality and operations yet achieve their maximum effect on supply chain performance through deep supply chain integration (Wang, & Feng, 2023). SCI enables perfect data collaboration with current situational awareness and unified decision-making processes which enhances the connection between BI implementation and supply chain result measurements (Abdallah, et al., 2023). Multiple empirical investigations show that organizations which deploy Business Intelligence tools within separate supply chains rarely achieve the complete advantages their information-driven capacities can bring (Salam, & Bajaba, 2023). Firms with disunified supply chains will encounter operational weaknesses which produce inventory mismanagement and weak supplier partnerships and delayed market reaction capabilities. Supply chain integration enables organizations to maximize BI capabilities which helps improve scheduling methods as well as supplier relationships and customer interaction (Rashid, et al., 2024). Research indicates the requirement for detailed assessments of specific industries to establish full SCI influence on the relationship between BI and SCP. Organizations need to build stronger supply chain relationships through digital transformation investments, so SCI becomes most effective at mediating supply chain impact. Further research should analyze the relationship factors while concentrating on emerging markets that present distinct supply chain difficulties. Therefore, this study hypothesizes that:

$H4a_1$: There is a mediating effect of internal integration on the relationship between technical competency and supply chain performance in the Jordanian Food Manufacturing Industry

$H4a_2$: There is a mediating effect of supplier integration on the relationship between technical competency and supply chain performance in the Jordanian Food Manufacturing Industry

$H4b_1$: There is a mediating effect of internal integration on the relationship between managerial competency and supply chain performance in the Jordanian Food Manufacturing Industry

$H4b_2$: There is a mediating effect of supplier integration on the relationship between managerial competency and supply chain performance in the Jordanian Food Manufacturing Industry
$H4c_1$: There is a mediating effect of internal integration on the relationship between cultural competency and supply chain performance in the Jordanian Food Manufacturing Industry
$H4c_2$: There is a mediating effect of supplier integration on the relationship between cultural competency and supply chain performance in the Jordanian Food Manufacturing Industry

Top Management Commitment as a Moderator

The commitment of top management (TMC) functions as a moderating variable which shapes how Business Intelligence (BI) competencies impact supply chain performance (SCP). Research shows that executive backing functions as a vital element for achieving organizational resistance removal and maintaining strategic concurrence together with funding resource distribution for BI implementation (Rahman, et al., 2023). Firms without sufficient TMC experience implementation issues in BI that result in unsatisfactory supply chain results (Ahmad, et al., 2024). Through the Resource-Based View theoretical framework firms possessing dedicated leadership enhance their ability to use strategic data assets as competitive advantages by transforming data insights (Karatepe, et al., 2024). Dynamic Capabilities View (DCV) demonstrates that upper-level management fully controls the vital responsibility of sustaining innovation while conducting digital transformations and BI framework integration into supply chain operations (Ayele, & Singh, 2024). Organization-wide proactivation under executive managers leads to enhanced supply chain connections and market change adaptability while also increasing operational effectiveness according to studies conducted by Dei Mensah, et al., (2024). Organizations that receive insufficient executive backing encounter difficulties in their BI project timeline and struggle with poor team communication and their analytic capabilities stay under-utilized. The impact of BI on SCP becomes more significant after organizations enhance their Total Market Centers through leadership development training together with digital literacy programs and transformational change initiatives. More research needs to develop targeted leadership approaches for different sectors to gain optimal results from BI-based supply chain advancements. Therefore, this study hypothesizes that:
H5a: There is a moderating effect of top management commitment on the relationship technical competency and supply chain performance in the Jordanian Food Manufacturing Industry
H5b: There is a moderating effect of top management commitment on the relationship between managerial competency and supply chain performance in the Jordanian Food Manufacturing Industry
H5c: There is a moderating effect of top management commitment on the relationship between cultural competency and supply chain performance in the Jordanian Food Manufacturing Industry

Research Gaps

Researchers have studied business intelligence and supply chain integration as well as supply chain performance extensively but there are still unaddressed gaps. Currently there is a shortage of academic work analyzing the effect of BI on supply chain management in developing market sectors such as the food manufacturing industry in Jordan. The sector demands specific evaluation of BI effectiveness in supply chain results due to resource

challenges together with fragmented supply networks and regulatory restrictions (Hatamlah, et al., 2023). Studies about Business Intelligence and Supply Chain Performance relationships do not include research on supply chain integration as the linking factor between these variables. Research studies identify the significance of smooth supply chain integration and information coordination but need more empirical research to measure how integration strengthens BI adoption's connection to performance outcomes (Paradza, & Daramola, 2021).

The research fills the existing gap by performing empirical tests on SCI's mediating function which establishes novel principles about how this mechanism yields better performance results. Studies lack insight regarding the influence that Top Management Commitment (TMC) has on BI adoption and SCI acceptance. A company's leadership needs to demonstrate complete commitment because it helps resolve organizational resistance to change and ensures strategic alignment and develops a data-driven approach within the company. Available research has failed to provide comprehensive insight about how differences in Top Management Commitment affect BI effectiveness in supply chains according to Khan, and Emon, (2025). Introducing Top Management Commitment as a moderating variable allows this study to better explain when information systems implementation leads to enhanced supply chain results. Better understanding these research gaps will create valuable data for people working in supply chain management and government officials as well as academics who want to improve supply chain performance during times of resource constraints.

Conclusion and Future Research Directions

Supply chain performance significantly depends on Business Intelligence (BI) competencies because these competencies let organizations use data-driven insights to make better decisions and operate more efficiently and integrate their operations. This review demonstrates how BI competency factors at technical and managerial and cultural levels improve supply chain integration to produce better overall business results. Supply chain integration allows stakeholders to work together efficiently and exchange information whereas it lets businesses respond better to market changes by minimizing inefficiencies. Top management dedication proves essential for BI system success because their leadership determines resource distribution and organizational alignment and guides cultural evolution. Organizations gain operational resiliency together with enhanced competitive position when they successfully implement BI capabilities in their supply chain management approach. Although the assessment provides important findings it presents significant restrictions.

Current BI adoption trends as well as new challenges in developing economies are not acknowledged in depth by this analysis because it depends mainly on existing literary sources. The study establishes essential connections between BI and supply chain integration and performance measurement, but it lacks actual empirical tests which reduces the potential for generalization of its findings. The review depends on secondary data collection that might lead to biases in how researchers interpret the analyzed information. Additional research needs to establish empirical testing and broaden existing knowledge in order to address these reported limitations. Research should emphasize performing industry-specific case analyses because it examines how Business Intelligence competencies perform within different supply chain settings. Research investigating how Business Intelligence adoption patterns evolve throughout time and shapes its long-term performance would deliver better understanding

about sustainable BI achievements. Evaluation of the effects that upcoming technologies like artificial intelligence systems and blockchain should become part of future research which aims to strengthen supply chain integration. Expanding research to include the role of government policies and regulatory frameworks would offer a more holistic understanding of the factors shaping BI adoption and supply chain performance.

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