

Competitive Advantage as a Mediator between Supply Chain Management, Logistics Integration, and Sustainable Performance: Evidence from Jordan's E-Commerce and Logistics Sector

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Abstract. This research examines the mediating effect of competitive advantage between supply chain management and logistics integration on sustainable performance. The study is a quantitative, cross-sectional survey research which focuses on managers and chief logistics officers in the e-commerce and logistics industry in Jordan. The convenience sampling was applied, and 379 valid responses were obtained, which is enough to meet the suggested requirements of the sample size adequacy. Partial least squares structural equation modeling (PLS-SEM) was used to analyze the collected data in order to test an elaborate, prediction-oriented research model. The results found logistics integration has a significant and positive impact on sustainable performance, and supply chain management not significant on sustainable performance. More importantly, the research confirms the mediating mechanism where both supply chain management and logistics integration have positive contribution to the competitive advantage, which in turn is a key mediator of sustainable performance. These findings highlight the strategic significance of operational excellence as a route toward market excellence as well as overall triple bottom line performance in a new market environment. In theory, the research contributes to the resource-based perspective in placing integrated supply chain capabilities as strategic assets that deliver sustainable performance through a competitive advantage. In practice, the results serve as guidance to managers and policymakers in Jordan by highlighting the necessity to focus the practice of logistics integration and supply chain management as the means of attaining a defensible competitive advantage and addressing the environmental and infrastructural challenges of the blistering e-commerce development.

Keywords: Supply Chain Management, Competitive Advantage, Logistics Integration, Sustainable Performance, Jordan E-Commerce

1. Introduction

The global economy today is marked by hyper-competition and complex market conditions (Jum'a, Zighan, & Alkalha, 2025). The globalization of supply chains has had paradoxical effects on businesses (Zhang, Zhang, & Feng, 2024). While businesses enjoy expanded market access and increased operational efficiency, globalization has also introduced greater levels of complexity (Rahmana, Nathb, Barsac, & Chowdhuryd, 2024; Sanders, 2025). Businesses struggle on all fronts, trying to lower operational costs and cycle times while delivering high quality products and services to the ever-growing global marketplace. With these demands come relentless pressures to improve operational efficiency (Corti & Kalchschmidt, 2025; Dani, 2025). The fast moving competitive environment demands the development of advanced planning and control to manage the entire supply chain from the first to the last step in the process (Hugos, 2024; Vaka, 2024). As a result, the supply chain of an organization has assumed a vital role in determining organization performance and has become the primary driver of competitive advantage (Enas, Al-sharari, Ghaith, Al-Ghalabi, & Hamdan, 2022; Wiredu, Yang, Sampene, Gyamfi, & Asongu, 2024).

In tandem with the increasing demands of the market, there has been a notable shift within the global community that has resulted in a greater awareness of the social and economic systems that impact the ecosystem (Kim, Bendle, Hulland, & Pfarrer, 2024). The change in public attitudes towards the ecosystem and the economy has resulted in the rise of the model of the 'triple bottom line' of sustainable development as a guiding principle in business (Abraham, 2024; Aiguobarueghian, Adanma, Ogunbiyi, & Solomon, 2024; Cantele, Landi, & Vernizzi, 2024). There is a diverse and increasingly influential cross-section of society, including customers, institutional shareholders, government regulators, and non-government organizations, who are demanding that businesses take responsibility for the consequences of their activities (Jatta, 2025; Maen, 2024). This social activism has made irrelevant the old focus of business exclusively on the profit maximization of its shareholders (Mosca & Greco, 2024). Businesses, as a result, are increasingly being required to adopt a more comprehensive and integrated approach (Khan, Emon, & Siam, 2024). This involves embedding sustainability into the core of their corporate strategy and business models because their social license to operate, and therefore their long-term viability, depends on a business model that is both socially and economically sustainable (Alzghoul, Abu Bakir, & Ghaith, 2023; Christodoulou et al., 2025; Wahyuni, Hidayat, Ramli, Syam, & Salsabilah, 2024).

The field of sustainable supply chain management has primary documented field impact as a result of concern for viability conflicting pressures and competitiveness arising responsively (Singh, 2025). Sustainable SCM entails a paradigm shift in the field of study and practice of supply chain management, as it manages and governs supply chain systems not in terms of profitability only but in its ability to design the system in a way that is regenerative, restorative in nature, and from an economic, social. And environmentally economically persistent through the entire life cycle of a product (Bag, 2025; Oyefusi, 2025). This requires unprecedented design and a complete overhaul of the supply chain system processes and activities: product design, sourcing, manufacturing, logistics and distribution, and reverse logistics, that are to ensure the development principles are suffused within (Burke, Zhang, & Wang, 2023; Letunovska et al., 2023). This illustrates that sustainable SCM cannot be placed within a binary structure, as it is the result of dealing a multi-faceted external environment (Panigrahi, Bahinipati, Govindan, & Parhi, 2025).

The philosophical underpinning of supply chain management is the quest for multiple forms of sustainable performance, an all-encompassing construct of organizational prosperity that is more than the mere achievement of success (Dandutse, 2024; K. Li, 2022; Oyefusi, 2025). This construct is most fully captured through the triple bottom line (TBL) framework, which requires in-depth performance evaluation along three dimensions, considering the dimensions as a set that are: economic, environmental, and social (Angorani, 2025; Yosef, Jum'a, & Alatoon, 2023). It is important to note

that although the economic dimension is no longer the sole focus, it is still a significant component of the framework and includes such metrics as profitability, cost efficiency, and financial viability over the long term (Montoya-Torres, Muñoz-Villamizar, & Mejia-Argueta, 2023). The environmental dimension of a firm seeks to improve the firm's negative ecological footprint through the adoption and implementation of objectives that emphasize the reduction of greenhouse gas emissions, resource conservation, and generation of less waste (Bag, Gupta, Kumar, & Sivarajah, 2021; Belhadi, Venkatesh, Kamble, & Abedin, 2024; Karaman, Ellili, & Uyar, 2024). The social dimension relates to the impact the firm has on its members and includes the promotion of positive community and governmental relations, the practice of responsible and humane treatment of workers, and the improvement of worker's health and well-being (Al Masri & Wimanda, 2024; Alzghoul, Lehyeh, Enas, & Ghaith, 2023; Bag, 2025).

To achieve sustainable performance, organizations must understand the importance of well-structured and implemented supply chain management (J. Ma, Lin, Altantsetseg, & Moslehpour, 2025; Osei, Papadopoulos, & Acquaye, 2025). These practices are the sets of strategies, routines, and activities that organizations purpose to control and direct their supply networks (Bag, 2025). These diverse sets of practices involve the creation of strategic long-term relationships and partnerships with suppliers, customer relationship and expectations management, structured and systematic information sharing, and the optimization of internal processes (Agarwal & Gupta, 2024; Harju, Karttunen, & Hallikas, 2025; Saad, Elgazzar, & Kac, 2022). There is consensus in the literature that arrays of supply chain management is the foundation upon which every firm's supply chain is built and it is the primary condition for the supply chain to be flexible, responsive, and efficient (Hugos, 2024; Richey, Roath, Adams, & Wieland, 2022; Varma, Singh, & Patra, 2024). These practices allow organizations to better coordinate complex, multi-echelon activities and to have the ability to respond swiftly and appropriately to market changes, geopolitical shocks, and other disruptions (Varma et al., 2024).

During the process of supply chain management, the ability of logistics integration stands out as one of the most and especially important factors of performance (Monjur & Akon, 2023; Tukamuhabwa, Mutebi, & Kyomuhendo, 2023). Logistics integration refers to the extent to which the organization is able to align and integrate its logistics activities internally across different functions (e.g. procurement, manufacturing, marketing) and externally to its supply chain partners, downstream and upstream i.e. customers, suppliers, third party logistics and service providers (Dadzie, Dadzie, Johnston, Winston, & Wang, 2023; Negi, 2024; Schönsleben, 2023). Attainment of high logistics integration is able to break down harmful functional silos and allow for seamless and unimpeded movement of tangible commodities, valuable data and finances across the supply chain (Aykor, 2025; Mammadov, 2024). This level of seamless movement leads to optimization of transport networks, rationalization of inventories and improved responsiveness to the market which results in operational cost savings and improved service to the customer (Mammadov, 2024; Oteri et al., 2023).

The carefully considered integration of supply chain management and logistics can lead to the achievement of a sustainable and defensible competitive advantage (Alasfar, 2024; Lin & Chu, 2025). Strategic management literature identifies competitive advantage with the marketer's unique and positive positioned market status resulting in comparably higher returns than a competitor in the same market (Rosário & Raimundo, 2024). Competitive advantage can manifest in several ways with the most evident being through a cost advantage (cost leadership), offering unique or superior products and services (differentiation), or through the servuction of an underserved market niche (Abdallah, Ghaith, Alzghoul, Khaldoon, & Alhareth, 2025; Noor, Till, & Hafeez, 2025; Tapadia, Pgdmb, & Principal, 2024). This research studies the perspective that competitive advantage is not an external variable but rather an internal result from the firm's difficult-to-duplicate resources and core competences in operational areas like supply chain management and logistics. This competitive advantage, once gained, is then the primary driver that sustains the enterprise's preparedness to engage in the necessary targeted

investments to achieve and maintain superior performance over an extended time (Ghaith, 2023; Shi & Zailani, 2025).

For these particular and intricate theoretical frameworks, the Hashemite Kingdom of Jordan becomes the most suitable and intriguing geographical phenomena. Jordan's government has provided a blueprint regarding the country being a main pillar in the vicinity concerning trade and commerce, especially in the country's e-commerce and logistics diversification and sustained growth (Aloun, 2024; Alrifae, 2025). Consequently, the Jordanian logistics market is anticipated to expand significantly in the coming years, driven primarily by the growth of e-commerce (Al-Khatib et al., 2025; Aqabneh, 2025; Khadra, 2025). However, this rapid growth comes with significant challenges, primarily in the area of sustainability (Alnsour, Arabeyyat, Al-Hyari, Al-Bazaiah, & Aldweik, 2023; Rosi & Obrecht, 2023). There is no doubt that the increasing levels of trade and the activities that will accompany the logistics will put additional pressure on the country's already strained environmental and infrastructural resources (Al-Ghalabi, Ghaith, Al-Shamaileh, & Altarawneh, 2024; Mustafa, 2025). This raises immense pressure on Jordanian companies to adopt sustainable approaches to their business activities.

Therefore, this study aims to bridge a significant evidentiary gap within the available literature by suggesting and empirically testing a unified theoretical framework that describes and measures the mediating effect of competitive benefit on the supply chain management, logistics integration, and sustainable performance nexus within the fast-evolving and under-theorized e-commerce and logistics industry in Jordan.

2. Literature Review and Hypothesis Development

Supply Chain Management on Sustainable Performance

The intersection of the supply chain management and sustainable performance is a key theme of the modern-day business research (T. Feng, Qamruzzaman, Sharmin, & Karim, 2024; Osei et al., 2025). Supply chain management include strategic sourcing, supplier development, inventory management, and customer relations, and are becoming an established tool to which an organization can use to achieve its sustainability goals (Raj et al., 2025; Salunke, 2024). Through the incorporation of sustainable supply chain management, organizations are able to give more responsibilities towards the environment and the society at large considering the supply chain network that they are in and not just the operation of their organizations (Mahmood, Misra, Sun, Luqman, & Papa, 2024; Ngo, Quang, Hoang, & Binh, 2024; Siems, Seuring, & Schilling, 2023). Together, the activities inherent in one practice of supply chain management and the issues of sustainability offer the entry points to nearly all the complexity of the market that exists today in the global market (Fritz, 2022; Khanfar, Iranmanesh, Ghobakhloo, Senali, & Fathi, 2021). A combination of sustainable supply chain management and reputation of a firm allows firms to reduce supply chain management risks and establish other channels of sustainable performance (S. Das & Hassan, 2022).

The beneficial and high-impact of supply chain management on the sustainable performance is becoming increasingly evidenced empirically (Billah et al., 2023; Mousa et al., 2025). This connection has been reported in numerous researches conducted in different industries and regions. As an example, it was found out that the implementation of supply chain management results in better economic results and higher environmental performance (Ali, Hossain, Islam, & Alam, 2024; Alzoubi, Shwedeh, Shamout, Alquqa, & Bawaneh, 2024; García Alcaraz et al., 2022). On the same note, other research on social sustainability has reported increases in social and monetary performance due to the use of socially responsible supply chain management (S. Das & Hassan, 2022; Raza et al., 2021). An extensive literature review confirms that the practices of supply chain management generate better performance of a firm according to virtually any parameter, which is why the relationship is positive and significant (Habib et al., 2021). Such results underline the need to integrate sustainability as a fundamental element in every body of the supply chain management.

H1: Supply chain management has significant effect on sustainable performance

Logistics Integration on Sustainable Performance

Logistics integration, which is believed to be the degree to which a business coordinates its logistics activities with both its internal functional departments and its external collaborators, is a fundamental facilitator of sustainable performance (Creazza, Colicchia, & Evangelista, 2024; Hassan, 2023). Nowadays the global economy is interrelated and the efficiency and effectiveness of logistics activities have the direct and significant impact on environmental and social imprint of a company (Baah, Agyabeng-Mensah, Afum, Acquah, & Essel, 2024; Yontar, 2022). Logistics integration, through the separation of silos and the creation of a seamless cooperation between the supply chain, helps to optimize transportation paths, decrease the quantity of inventory, and decrease wastage, which leads to increased sustainability results (Kusumawati, 2025; Mammadov, 2024). A cohesive logistics system gives the visibility and control that is needed in the implementation and monitoring of sustainable practices, to be applied uniformly throughout the point of origin to the point of consumption (Adeniran, Efunniyi, Osundare, & Abhulimen, 2024; Sharma, Batra, & Sharma, 2024). Logistics integration has an impact on sustainable performance that can be evidenced in all three dimensions (Jayarathna, Agdas, & Dawes, 2024; Kumar, 2022; Shee, Miah, & De Vass, 2021; Yang, Thoo, Ab Talib, & Huam, 2024).

Empirical studies are always keen to highlight the beneficial connection between sustainable performance and logistics integration (Baah et al., 2021; Garg & Vemaraju, 2025). According to studies, companies with higher degrees of internal and external logistics integration are likely to portray excellent environmental performance (X. Li et al., 2022). Moreover, intimate coordination with the suppliers and customers can hasten the execution of a collective sustainability program, which includes collective transportation and collective package reduction programs. In addition, the adoption of logistics and protocol of secondary functions such as marketing and product development may foster the creation of more sustainable products and services (Ceynowa, Przybylowski, Wojtasik, & Ciskowski, 2023; Creazza et al., 2024). Logistics performance is a crucial factor in the aggregate environmental sustainability of a country, which provides the macroeconomic importance of effective, combined logistics systems (Ohakwe & Wu, 2025; Qazi, 2025; Shamout, 2024).

H2: Logistics integration has significant effect on sustainable performance

Supply Chain Management on Competitive Advantage

Supply chain management are an effective way to gain and maintain competitive edges in the marketplace (G. Das et al., 2023; Kalaitzi & Tsolakis, 2022). The ability to manage the movement of products and information seamlessly and predictably throughout the networks is a core supply chain management differentiator in the competitive market (James, 2025; Zou, He, & Sun, 2024). Incorporating supply chain management such as strategic supplier partnerships, customer relationship management, and information sharing, businesses are able to operate more efficiently, respond to the market with greater agility, and increase the value recipients receive from their offerings (Al-Rawashdeh, Jawabreh, & Ali, 2023; Alam, 2022). The ability to fine-tune their supply chains, craft an edge that competitors cannot copy, and sustain that profitability for the foreseeable future is the competitive advantage long-term market leaders have (Sanders, 2025).

Several studies have shown the link between supply chain management and competitive advantage (Alshurideh et al., 2024; Jahanbakhsh Javid & Amini, 2023; Nuraini, Sarkum, & Halim, 2021). Many researchers have shown that entities of a firm that has well-developed capabilities in supply chain management such entities will outperform the firm's competitors in terms of market share and profitability and satisfaction of the customer (Mogaka, 2023; Renaldo & Augustine, 2022). Mukhsin and Suryanto (2022), showed that there is a positive effect of supply chain management and competitive advantage on the firm's performance. Many studies have shown that sustainable supply chain

management have a great advantage on the firm (Nuraini et al., 2021; Silitonga, Setiawati, & Immanuella, 2023; Sinaga, Anggraeni, & Slamet, 2021). These facts denote the importance of supply chain management for a firm to be competitive in modern business. Hence;

H3: Supply chain management has significant effect on competitive advantage

Logistics Integration on Competitive Advantage

Logistics integration is a pillar of modern supply chain strategy and is a strong driver of competitive advantage (Negi, 2024; Tukamuhabwa et al., 2023). By synchronizing and coordinating the activities of the logistics within the organization as well as with the outside stakeholders, the companies can achieve a higher level of operational excellence that is very difficult to be emulated by other companies trying to achieve the same efficiencies (Chiarini & Kumar, 2021). Internal integration involves smooth coordination of logistics with the ancillary functional areas such as procurement, manufacturing and marketing whereas external integration expands this coordination to include suppliers, customers and third-party logistics providers (Chen & Su, 2023; Fotiadis, Folinias, Lindgreen, Gasteratos, & Vassiliadis, 2025; C. Ma, Zhang, Gao, & Liu, 2025). Such an integrated logistics management enables the creation of a more efficient, nimble, and customer-responsive supply chain, therefore, providing a solid basis of developing sustainable competitive advantage (Chang, Lu, & Lai, 2022; Sodikin & Susilowati, 2024).

The positive correlation between logistics integration and competitive advantage is supported with strong evidence by the results of empirical studies (Madhani, 2017; Mellat-Parast & E. Spillan, 2014; Remondino & Zanin, 2022). Studies have always shown that those companies with high levels of both internal and external logistics integration were able to record better performance measures in terms of cost, quality, delivery, and flexibility measures (Omoegun, Fiemotongha, Omisola, Okenwa, & Onaghinor, 2024; Rehman & Jajja, 2023). As one example, it has been demonstrated that logistical capabilities integration is a critical factor that determines the increase in financial performance and overall effectiveness of a supply chain of a firm (Eslami, Jafari, Achtenhagen, Carlbäck, & Wong, 2024; Lee, 2021; Tarigan, Mochtar, Basana, & Siagian, 2021). In addition, the ability to successfully combine logistics operations is a decisive dynamic capability, which can make firms adapt to the changing conditions on the market and maintain their competitive advantage in the long-run (Irfan, Sumbal, Khurshid, & Chan, 2022). This body of evidence highlights the strategic necessity of making investments in logistics integration as a vehicle to achieving sustainable competitive advantage (Ruiz-Fernández, Rienda, & Marco-Lajara, 2024).

H4: Logistics integration has significant effect on competitive advantage

Competitive Advantage on Sustainable Performance

The linkage between competitive advantage and sustainable performance is a question of increasing concern in the strategic management (Aidara et al., 2021; Romadhon, Fitri, & Sari, 2025; Shebeshe & Sharma, 2025). Competitive advantage is the special place that a firm takes within its industry that allows it to beat its competitors, which is traditionally considered as a source of economic performance (Farida & Setiawan, 2022). Nevertheless, recent views suggest that a strong competitive advantage is also an effective driver toward the achievement of more general sustainability goals (Ahmadi-Gh & Bello-Pintado, 2022; W. Wang, Zhang, Wang, Zhu, & Morabbi Heravi, 2023). Companies with sustainable competitive advantage, based on either cost leadership or differentiation, or niche-market focus are in more of a position to invest in and enjoy the benefits of sustainability programs (Bartram & Höltermann, 2025; Galli-Debicella, 2021; Ghaith & Mutia, 2019; Shams, Brown, & Hardcastle, 2025). This can be explained by the fact that they have better financial performance that enables them to provide resources and flexibility to achieve long-term sustainability, which may not have financial returns in the short term (Ahmad, 2025).

There is empirical research that proves the assumption of competitive advantage as a critical facilitator of sustainable performance (Mehboob & Zaidi, 2024; Quan & Khan, 2024; Saputra, Subroto, Rahman, & Saraswati, 2023). Studies have shown that companies enjoying a large competitive advantage are more disposed to use proactive environmental policies and have greater environmental and social performance (Owusu, Zhou, Kwasi Sampene, Sarpong, & Arboh, 2024). Indicatively, it was found out that green competitive advantage plays a significant role in mediating between green intellectual capital and sustainable performance (Romadhon et al., 2025). This indicates the need to consider using sustainability as a competitive differentiator in order to achieve high sustainability results (Ahmadi-Gh & Bello-Pintado, 2022). It also seeks to achieve a sustainable competitive advantage inspires a more holistic and integrated attitude towards sustainability to support environmental, social and economic issues to the core business strategy of the firm (Bari, Chimhundu, & Chan, 2022; Ercantan, Eyupoglu, & Ercantan, 2024; Lopes, Gomes, Pacheco, Monteiro, & Santos, 2022).

H5: Competitive advantage has significant effect on sustainable performance

Mediating Role of Competitive Advantage

The mediating role of competitive advantage in the bridging between firm strategy and performance outcomes is an established principle (Borji & Niguse, 2025; Çağlıyan, Attar, & Abdul-Kareem, 2022; Correia, Dias, & Teixeira, 2021; Obeidat, Hindawi, Alomari, & Al jazi, 2025). This mediational process argues that the effects of certain managerial practices, most especially those related to the supply chain management, do not always have direct effects on the performance (Astawa, Pirzada, Budarma, Widhari, & Suardani, 2021; Wainaina, Bett, & Njehia, 2021). Instead, these practices first help the firm to build competitive advantage and this eventually translates to high performance measures (Wiredu et al., 2024). Supply chain management play a central role in developing a competitive advantage, either cost leadership, differentiation or responsiveness and it is a competitive advantage that facilitates and encourages companies to achieve high levels of sustainable performance (Arianpoor & Moghaddampoor, 2024; Dangol, Eunni, Bateman, & Marculetiu, 2024; Sharabati, Al-Atrash, & Dalbah, 2022). The indirect path therefore offers a more refined understanding of the way investments in supply chain capabilities have discernible results of sustainability (Aljawarneh, Kader, Ziyad Saleh, Taha, & Obeidat, 2022; Ning & Yao, 2023).

Competitive advantage mediation has been supported by empirical studies in the connection between supply chain management and sustainable performance (Ahmed Mustafi, Dong, & Hosain, 2025; Shebeshe & Sharma, 2024). To illustrate, studies have shown that supply chain management have a positive influence on the generation of competitive advantage which ultimately increases the sustainable performance (Shebeshe & Sharma, 2025; Wiredu et al., 2024). Other researchers have found competitive advantage to be a relevant mediating factor that enhances performance of small and medium enterprises SMEs companies by applying sustainable strategies (Rochayatun, Praktiko, Wardoyo, & Handayati, 2023; Rua, França, & Fernández Ortiz, 2018). Therefore, direct relationship existing between supply chain management and sustainable performance cannot be total without considering the central role of competitive advantage (Baah & Jin, 2019; Khaksar, Abbasnejad, Esmaili, & Tamošaitienė, 2016; Mukhsin & Suryanto, 2022). This is achieved by focusing on the development of competitive advantage, which is achieved through supply-chain activities that enable firms to better convert sustainability activities into measurable performance gains (Dyahrini, Mauludin, Ichsan, & Sinaga, 2021; Islami, 2021).

H6: Competitive advantage mediates the relationship between supply chain management and sustainable performance

Similar to its contribution in the general practices of supply chain management, the competitive advantage is theorized to play a critical mediator in the logistics integration relationship and sustainable

performance (Mashat, Abourobkbah, & Salam, 2024). Direct effect of logistics integration on sustainability results may be realized as being of great importance, but this can be better analyzed within the framework of competitive capabilities that are brought about by logistics integration (Kamble et al., 2023; Remondino & Zanin, 2022). The logistics integration can contribute to the operational performance of firms, which yield cost reduction and service improvement, which are the cornerstones of a strong competitive edge (Abdul-Aziz Ahmad & Jais, 2024; Tukamuhabwa et al., 2023). This enhanced competitive advantage is what provides the strategic drive and financial ability of a firm to seek and achieve greater heights of sustainable performance, thus providing an indirect but direct route towards integrated logistics and sustainability achievement (Bari et al., 2022; Bukhari, Bukhari, Troise, Hayat, & Bresciani, 2025).

Although no direct empirical data on the mediating effect of competitive advantage in the particular relationship between logistics integration and sustainable performance has been developed yet, the logic behind this is well supported by the relevant streams of research. The connection between logistics integration and competitive advantage and between competitive advantage and overall organizational performance have been strongly established through studies, which are increasingly using sustainability metrics (Dabees, Liseć, Elbarky, & Barakat, 2024; Mukhsin & Suryanto, 2022). The studies concerning the larger phenomenon of supply chain integration have proved that the beneficial impact that it has on the performance of firms is frequently mediated by competitive advantages that it brings about (Chirchir, 2022). Thus, it is fair to assume that the positive logistics integration effects are also converted into sustainable performance via the system of mediating competitive advantage. The proposed indirect relationship is what this research is trying to explicitly test.

H7: Competitive advantage mediates the relationship between logistics integration and sustainable performance

3. Research Framework

Although the topic of supply chain management is gaining ground, significant gaps between theory and practice remain (Fritz & Ruel, 2024). First, the empirical evidence of the relationship between the supply chain management and sustainable performance of the firm has persistent inconsistencies with both positive effects reported in some studies (Ali et al., 2024; Basit, 2022; El Mokadem & Khalaf, 2025; Martínez-Falcó, Sánchez-García, Marco-Lajara, & Andreu, 2024), negative or insignificant effects reported (Esfahbodi, 2016; M. Feng et al., 2018; Wolf, 2014). Such discrepancies imply that there are ignored contextual variables and mediating processes that develop this relationship. Although some studies have explored the mediating role of competitive advantage, the studies have mostly looked at supply chain management with little emphasis on particular relationship between integration of logistics and sustainable performance (Ahmed Mustafi et al., 2025; Shebeshe & Sharma, 2024). Moreover, the majority of the currently existing research has been done in advanced economies or manufacturing sector (Razzak, 2023), thus creating a huge gap in comprehension as to how such dynamics translate into the specific setting of emerging economies and service-based markets, including the Jordan e-commerce and logistics sector (Dalain et al., 2025).

The major theoretical frameworks that used in the study are the Resource-Based View (RBV). The RBV holds that competitive advantage of a firm is based on the unique, valuable, rare, and inimitable resources and capabilities of a firm (Ghaith, AlNawafleh, Al-Taie, & Tweiqat, 2025; Sun, Chen, & Mei, 2024; Zvarimwa & Zimuto, 2022), and supply chain management and integrated logistics can be regarded as one of such capabilities (Komakecha, Ombatib, Kikwathab, & Wainainab, 2025; Rantanen, 2021). In addition, Dynamic Capabilities Theory that focuses on the ability of firms to incorporate, create and restructure internal and external competencies in reaction to the swiftly changing environments (Ghaith, Albhirat, & Alzghoul, 2025; Kero & Bogale, 2023; Sun et al., 2024); this perspective is fundamental to the understanding of how firms can change their supply-chain and

logistics capabilities in response to emerging sustainability issues (Arda, Montabon, Tatoglu, Golgeci, & Zaim, 2023; McDougall, Wagner, & MacBryde, 2022).

However, Resource-Based View theory, though powerful, are to a large extent focused on the internal abilities and may not sufficiently explain the exogenous forces that trigger the formation of the said abilities (Helfat et al., 2023). To address this weakness, the present research will use Stakeholder Theory which is the assertion that firms become a part of a larger web of stakeholders, such as customers, suppliers, employees, government, and the community, and their interests and demands need to be addressed (Awa, Etim, & Ogbonda, 2024; Freeman, Dmytriiev, & Phillips, 2021). Such framework provides a valid reason why firms implement supply chain management, assuming that the implementation thereof is predetermined by the explicit and implicit requirements of the different stakeholder groups.

This study attempts to manage these proven theories into one, all-inclusive model. It also tests more subtly the research neurological in which competitive advantage mediates the relationship between supply chain management, logistics integration, and sustainable performance. Using the specified integrative theoretical perspective to analyze the under-researched and fast-growing field of e-commerce and logistics in Jordan, the current study is not only a contribution to the theoretical framework but also provides important context-specific information.

Through the implementation of this integrated framework as shown in figure 1, the study aims at offering a better and more holistic treatment of how firms could strategically exploit their supply chain management and logistics integration in reaction to the expectations of stakeholders with the view to developing a competitive advantage that eventually leads to sustainable performance.

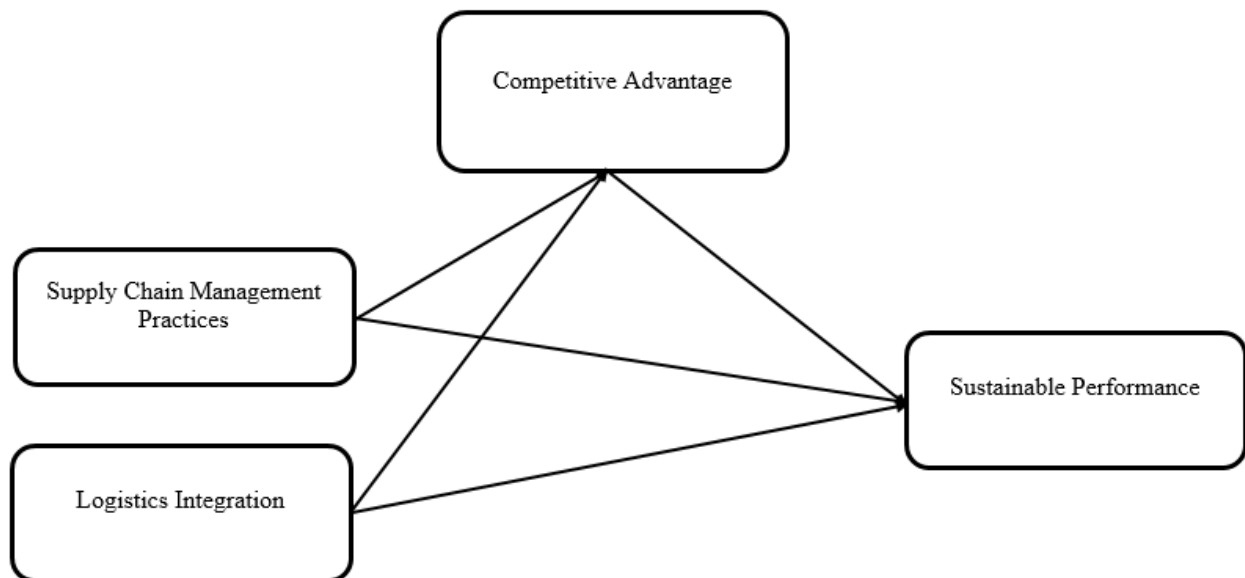


Fig. 1: Research Framework

4. Research Methodology

The research design used in this study is a quantitative research design based on a cross-sectional survey research design to find the relationship between supply chain management, logistics integration, competitive advantage, and sustainable performance in the industry of e-commerce and logistics services in Jordan. Since the industry is complex and a complete sampling frame was not available, non-probability convenience sampling method was used to locate respondents that have adequate knowledge on organizational practices. The population at hand will be the senior level staff such as the supply chain managers, logistics directors, and the senior logistics executives since they are the ones with the necessary knowledge to give informed evaluations on the levels of organizational performance

in relation to their activities. The respondents were recruited and approached using professional networking sites and contacts of the company and informed about the purpose of the research and the voluntariness of participation and confidentiality of the information they would provide before the surveys were conducted. A total 379 valid responses received, and kept to be further analyzed, which meets the minimum recommendations on the use of structural equation modelling presented by J. Hair, Page, and Brunsveld (2019) and offers a decent statistical power to identify any meaningful relationship between the constructs under investigation.

The data was obtained through a structured self-administered questionnaire that contained scales of validated multi-items and was based on past empirical research. The operationalization of all measurement items was done using a five-point Likert scale with 1 (strongly disagree) to 5 (strongly agree). The eight items used to measure supply chain management (Abdihakur, 2024), six items to measure logistics integration (Abdihakur, 2024), ten items to measure competitive advantage (Quynh & Huy, 2018), and twenty items to measure sustainable performance (Saqib & Zhang, 2021). The choice of these multi-item scales gives complete coverage on construct, and this increases content validity and lowers measurement error. The data obtained was analyzed with the help of the Partial Least Squares Structural Equation Modeling (PLS-SEM), which was chosen as it is highly suitable in the study of complex theoretical hypotheses including many latent constructs, can include mediation and moderation effects, is especially useful in research with a prediction orientation, and does not have strict distributional requirements. The analysis was done in two steps, initially, measurement model, to measure reliability and validity of constructs in terms of factor loading, composite reliability, average variance extracted (AVE), and discriminant validity, and second, structural model, to test the hypothesized relationship among constructs both in direct and indirect (mediated) effects.

5. Results and Discussion

The analysis of data was carried out on those responses obtained through a structured questionnaire which was given to 400 individuals 379 of which returned the valid questionnaires and were considered to be fit into statistical analysis which is a high response rate which increases the reliability of the findings (ALHATMI, Eishah, & ALRHABA, 2024; J. F. Hair et al., 2022). Data were first screened in terms of completeness and accuracy and then analyzed (Alawamreh et al., 2025; Creswell & Creswell, 2017). The characteristics of respondents were summarized using descriptive statistics and the proposed hypotheses were tested using the inferential statistical techniques. The findings showed statistically significant correlations among the research variables, which is an empirical validation of the research model, and confirmation of the strength of the measurement and structural models applied during the analysis.

Evaluation of measurement model

The analysis results as shown in the figure (2) indicate the measurement and structural models, which show the association between the supply chain management practices, logistics integration, competitive advantage, and sustainable performance. The measurement model used was to measure the indicator loadings to determine the extent to which each of the observed items measures its latent construct (Alawamreh, Obeidat, et al., 2023; J. F. Hair et al., 2022). Based on the guidelines of the PLS-SEM, the indicators with outer loadings less than 0.60 were dropped in order to improve convergent validity and general construct reliability (J. F. Hair et al., 2022). This implied that some of the items whose outer loadings were lower than the recommended 0.60 were eliminated. These were SCMP7 and SCMP8 of Supply Chain Management Practice, LI2, LI3 and LI6 of Logistics Integration, CA1, CA5, CA6 and CA9 of Competitive Advantage, and SP6, SP9 and SP10 of Sustainable Performance. This is in line with recommended PLS-SEM criteria, in which the elimination of indicators with low loading is a typical process of improving the internal consistency reliability and convergent validity of the constructs (Hair & Alamer, 2022). Importantly, the rest of the items were also reviewed after deletion

to make sure that this process would not impair the validity of the constructs. This review established that the theoretical field of every construct was sufficiently captured using the retained indicators, therefore, maintaining the conceptual rigor of the measurement model. The removal of these low-loading indicators makes the remaining items give a better and more solid depiction of their respective constructs and thus makes the model more robust to the ensuing structural analysis. The structural model shows significant relationships between the constructs, having high R^2 values of competitive advantage (0.923) and sustainable performance (0.961), which means that the model can explain the results. In this regard, major scientists in the sphere of structural equation modeling, like Hair, Sarstedt, and Ringle, point out that the meaning of R^2 values is extremely conditional on the context of the research and the complexity of the model (Sarstedt et al., 2020). In our study, the model is developed on a firm and sound theoretical foundation, with the independent variables being fully chosen according to their predictive validity in past researches. This is logically explained as the reason why they are able to explain a high percentage of the variance in the dependent variables.

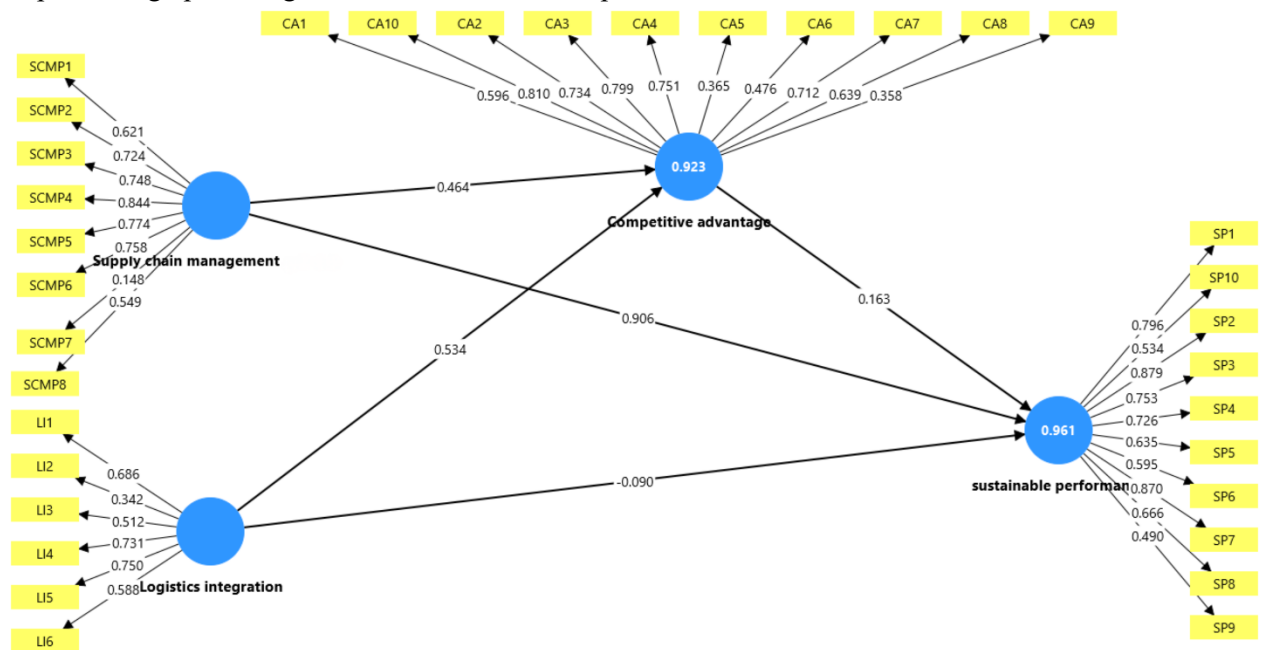


Fig.2: Evaluation of measurement model

Table 1 was applied to test the reliability and convergent validity of the constructs based on Cronbach alpha, composite reliability (ρ_c), and ρ_A (alpha, ρ_A , and ρ_c) and the average variance of extracted (AVE) (Alawamreh, Almhasneh, et al., 2023; Fornell & Larcker, 1981). The results indicate that all constructs are fulfilling as regards the internal consistency, with the values of Cronbach alpha between 0.678 (logistics integration) and 0.902 (sustainable performance). Although the integration of the logistics value is lower than the widely quoted value of 0.70, it is deemed to be reasonable in PLS-SEM especially when other reliability variables support it more substantially. Similar to most other methodologies such as Hair Jr, Howard, and Nitzl (2020), composite reliability is a better measure than Cronbachs alpha in PLS-SEM since it takes into consideration the various loadings of the indicators. In this investigation, composite reliability values (ρ_A and ρ_c) strongly support construct reliability wherein all constructs recorded high value of above 0.667 and 0.823 respectively, which testifies high internal consistency. Moreover, convergent validity can also be confirmed since the AVE values of all constructs are greater than the level of significance of 0.50, and the range of 0.562 (Competitive Advantage) to 0.676 (Sustainable Performance), demonstrates that the constructs explain a considerable piece of the variance in their indicators. Overall, these results confirm that measurement model is efficient and reliable in the further structural analysis.

Table 1: Construct Reliability and Validity

	Cronbach's alpha	Composite reliability (rho a)	Composite reliability (rho c)	Average variance extracted (AVE)
Competitive advantage	0.851	0.885	0.883	0.562
Logistics integration	0.678	0.667	0.823	0.609
Supply chain management practice	0.858	0.873	0.899	0.641
sustainable performance	0.902	0.912	0.925	0.676

The Fornell-Larcker criterion was used to determine discriminant validity and this criterion compares the square root of the average variance extracted (AVE) of each construct relative to the correlations between constructs. Based on the findings, the diagonal values that signify the square root of AVE (Competitive Advantage = 0.750, Logistics Integration = 0.780, Supply Chain Management Practice = 0.801, Sustainable Performance = 0.822) are higher than the other off-diagonal correlates with other constructs. This shows that both the constructs have greater variance with its indicators compared to other constructs, thus confirming the satisfactory level of discriminant validity. The measurement model, therefore, has reliability and clear distinction between the constructs and is therefore appropriate in the structural analysis.

Table 2: Discriminant Validity fornell-larcker Criterion

	Competitive advantage	Logistics integration	Supply chain management practice	sustainable performance
Competitive advantage	0.750			
Logistics integration	0.693	0.780		
Supply chain management practice	0.678	0.683	0.801	
sustainable performance	0.610	0.613	0.742	0.822

Structural Model Results

According to the findings presented in Table (3) and presented in Figure (3), the results of the structural model are both supportive and not supportive of the proposed hypotheses. The supply chain management practice to the sustainable performance (H1) had a positive but not significant correlation ($b = 0.041$, $t = 0.961$, $p = 0.337$), meaning that the practice of supply chain management does not have a direct impact on sustainable performance. Conversely, there was a positive and significant positive impact of logistics integration on sustainable performance (H2) ($b = 0.807$, $t = 11.001$, $p < 0.001$), making it of significant importance to making a difference in sustainability performance and this is consistent with recent studies (Kumar, 2022). As additionally reported in Table (3), and represented in Figure (3), the supply chain management practices were found to have a very strong and statistically significant influence to competitive advantage (H3) ($b = 0.355$, $t = 13.127$, $p < 0.001$) (Nuraini et al., 2021; Silitonga et al., 2023; Sinaga et al., 2021). whereas logistics integration showed a very strong and significant influence to competitive advantage (H4) ($b = 0.702$, $t = 22.862$, $p < 0.001$). In addition, competitive advantage demonstrated the positive and significant correlation with sustainable

performance (H5) ($b = 0.144$, $t = 2.354$, $p = 0.019$). As shown in Table (3), and visualized in Figure (3), the mediation analysis has shown that competitive advantage partially mediates the relationship between the supply chain management practices and sustainable performance (H6) ($b = 0.051$, $t = 2.178$, $p = 0.029$). Competitive advantage, in the same manner, was determined to mediate the connection amid logistics integration and sustainable performance (H7) ($b = 0.101$, $t = 2.456$, $p = 0.014$). By and large, the findings presented in Table (3) and Figure (3) show that logistics integration has both a direct and an indirect impact on sustainable performance via competitive advantage whereas supply chain management practices do so through competitive advantage only.

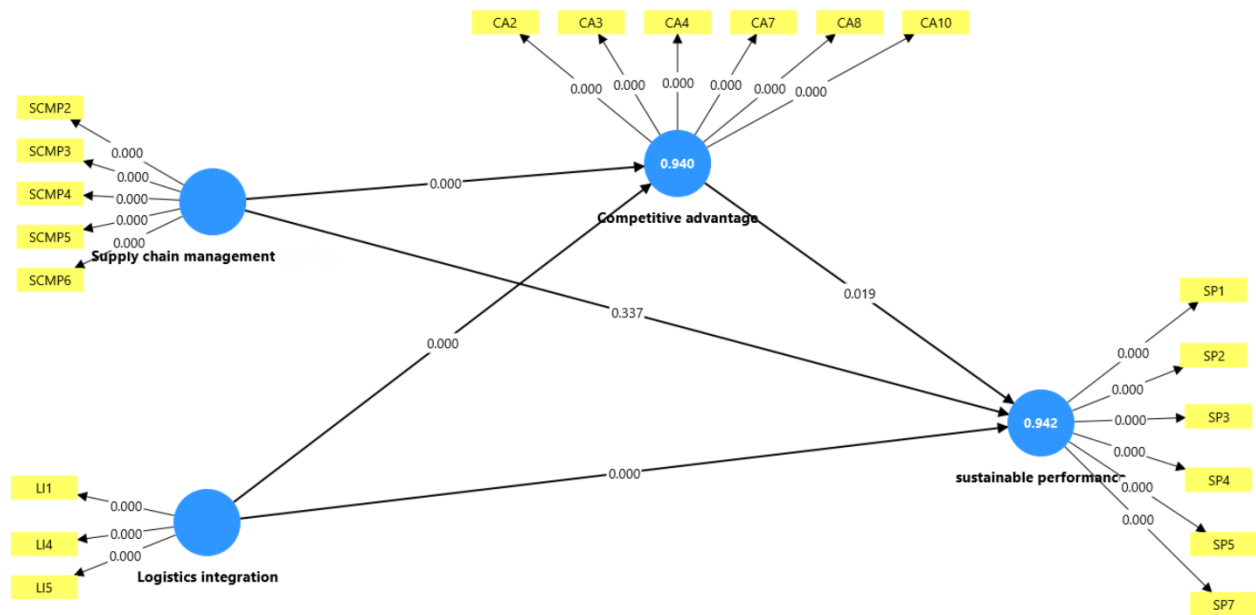


Fig.3: Evaluation of Structural Model

Table 3: Evaluation of Structural Model - Path coefficient

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
H1: Supply chain management practice -> sustainable performance	0.041	0.036	0.043	0.961	0.337
H2: Logistics integration -> sustainable performance	0.807	0.812	0.073	11.001	0.000
H3: Supply chain management practice -> Competitive advantage	0.355	0.353	0.027	13.127	0.000
H4: Logistics integration -> Competitive advantage	0.702	0.705	0.031	22.862	0.000
H5: Competitive advantage -> sustainable performance	0.144	0.140	0.061	2.354	0.019
H6: Supply chain management practice -> Competitive advantage -> sustainable performance	0.051	0.050	0.023	2.178	0.029
H7: Logistics integration -> Competitive advantage -> sustainable performance	0.101	0.098	0.041	2.456	0.014

The empirical evidence in this paper gives strong support of the suggested theoretical framework which examines the mediating effect of competitive advantage in the correlation between supply chain management, logistics integration, and sustainable performance in the context of e-commerce and logistics industry in Jordan (Letunovska et al., 2023; J. Wang, Zhu, Feng, & Feng, 2023). The findings substantiate that supply chain management practices and logistics integration are both relevant antecedents of sustainable performance through the process of competitive advantage both directly and indirectly.

The results show that the linkage between the supply chain management practices and sustainable performance is not substantiated. This outcome can be attributed to the fact that a number of recent studies have found that supply chain management practices do not always result into superior sustainable performance in any given setting. This is based on past studies that have indicated that the performance of such practices is highly dependent on the organizational capability, pressure by the stakeholders and compatibility of efficiency-based supply chain practices and sustainability goals. In other situations, the costs, complexity, and implementation issues of the supply chain management practices might exceed their possible sustainability advantages, which lead to negligible or even negative outcomes concerning the performance (Jayarathna et al., 2024; Kumar, 2022; Shee et al., 2021; Yang et al., 2024).

Furthermore, the positive correlation between the logistics integration and sustainable performance (H2) is highly supported, which gives evidence to the fact that effective internal and external coordination of the logistic activities and processes is necessary in order to increase the sustainability outcomes. Its high degrees of logistics integration allow the efficient flow of goods and information, minimize functional silos, lower inventory rates and streamline transportation processes, all of which lead to a better performance in the environment and in the operations. An integrated logistics system also offers increased visibility and control of the supply chain, which allows organizations to sustainably implement and monitor both the upstream sourcing and downstream consumption. These conclusions align with the recent empirical research indicating that the increased levels of logistics integration correlate with the high level of sustainability and environmental performance (Ceynowa et al., 2023; Creazza et al., 2024).

More importantly, the study validates the mediator role of competitive advantage. The findings show that supply chain management and logistics integration not only directly result in sustainable performance but also indirectly through establishing a good competitive position to the firm first. The relationship between competitive advantage (H3) and supply chain management is found to be positive, which is in line with the resource-based view, which assumes that the operational capabilities hard to imitate, including effective supply chain management are the main source of a defensible competitive advantage. This is consistent with the contribution of precious research (Nuraini et al., 2021; Silitonga et al., 2023; Sinaga et al., 2021). Moreover, the research confirms that logistics integration has a positive impact on competitive advantage (H4) as well, which is why the concept of smooth coordination of logistics is a competence core that enables companies to acquire cost leadership or differentiation. This is more applicable in the e-commerce industry where fast, dependable and affordable delivery due to high levels of integration in the logistics industry is one of the differences (Eslami et al., 2024; Lee, 2021; Tarigan et al., 2021).

Finally, the study is useful in proving that competitive advantage is a powerful force that fosters sustainable performance (H5). This means that the firms in high competitiveness status are in a better position and have more reasons to invest and support long term sustainability agendas. This ability to generate superior returns helps the venture to engage in specific investment that may lead to the high performance in the long run, both economically, environmentally, and socially (Mehboob & Zaidi, 2024; Quan & Khan, 2024; Saputra et al., 2023).

Moreover, the findings of the H6 confirm that sustainable performance is completely mediated by the competitive advantage between the supply chain management practices. This is a crucial discovery, in that, it suggests that the direct impact of the supply chain management on sustainable performance is not significant when the depth of competitive advantage is added as a mediator. This means that the advantages of supply chain practices are solely transferred as a result of the improvement of competitive positioning of a firm to realize the outcomes of sustainability. This is consistent with the new studies that have emphasized the strategic importance of competitive advantage in transforming supply chain capabilities into sustainability outcomes (Baah & Jin, 2019; Khaksar et al., 2016; Mukhsin & Suryanto, 2022).

Likewise, H7 analysis offers the evidence that the relationship between logistics integration and sustainable performance is partially mediated by competitive advantage. With this, logistics integration does not just enhance sustainability directly in this instance but also indirectly in the fact that a more competitive advantage is achieved through better coordination and efficiency. This two-fold development coincides with the existing evidence that proposes competitive advantage as a major mechanism of connecting logistics integration and sustainability performance (Dabees et al., 2024; Mukhsin & Suryanto, 2022). In general, these results prove the theoretical framework according to which competitive advantage is a strategic middle ground, which transforms operational excellence (through supply chain management and logistics integration) into overall organizational prosperity (sustainable performance) (J. Wang et al., 2023).

6. Conclusion

The current research adds significant value to the theory and practical application because it shows that the competitive advantage can mediate the relationship of supply chain management, logistics integration, and sustainable performance of e-commerce and logistics industry in Jordan. Theoretically, this study solves a historical contradiction in the literature by establishing that competitive advantage is a critical contextual variable between the operational excellence-sustainability relationship, which augments the resource-based perspective. In practice, the results demonstrate that strategically investing in the supply chain management, as well as logistics integration is an instrument of the utmost significance in the creation of sustainable competitive advantage. Managers are recommended to invest in digital platforms of integration where real-time data sharing between suppliers, organizations, and customers can be achieved, and joint sustainability key performance indicators should be established with logistics partners. To cope with environmental and infrastructural issues that come with the pace of development of e-commerce, policy-makers ought to facilitate increased integration of national logistics systems.

There is solid empirical evidence that proves the suggested theoretical framework. Although direct correlation between the supply chain management and the sustainable performance is not significant, integration related to the logistics has a strong positive correlation with the sustainable performance due to smooth flow of goods and information, less functional silo, low inventory and transportation processes. Competitive advantage comes out as a strong mediating variable and the benefits of supply chain management are fully mediated by competitive positioning whereas the effects of logistics integration are partially mediated. This shows that these two routes complement each other in the aspects of promoting sustainability, both in the short-term and in the long-term and this proves that competitive advantage acts as a strategic mediator between operational excellence to a full outcome of organizational prosperity and sustainable performance.

Although the contributions are present, the study has recognized considerable limitations, which lay definite paths of future research. The type of cross-sectional design does not provide a causal inference and understanding of time; future studies ought to adopt longitudinal designs in a way that they would analyze the ways through which competitive advantage maintains organizational commitment to sustainability over time. The context-dependent orientation of the e-commerce and

logistics industry in Jordan limits the ability to generalize the results to other industries and geographical settings; future research must be implemented in different industries and countries to determine the broader relevance of the framework. Also, the use of perceptual data exposes the risk of common method bias; the next research must include objective performance indicators and evaluate new technologies like blockchain and artificial intelligence as moderating variables that can make supply chain management and logistics integration effective so as to create the competitive advantage and sustainable results.

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