The Perceived Influence of Supply Chain Decisions on Overall Business Profitability: Evidence from Kurdistan's Real Estate Companies

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ABSTRACT

The demand for supply chain decisions is unending and continuously demands that managers be well equipped to make rational and effective decisions cost effectively to enhance business performance. This research aims to investigate the perceived influence of tactical, operational and strategic supply chain decisions on overall business profitability within the context of Kurdistan's real estate companies. This study contributes to the academic understanding of the role of supply chain decisions in real estate profitability, providing a foundation for further research in the field. 3 hypotheses linking tactical, operational and strategic supply chain decisions with overall business performance were formulated. A multiple regression model was estimated using 362 questionnaire observations collected from Kurdistan real estate companies' supply chain managers, project managers, procurement officers, and executives involved in decision-making processes in Erbil. The findings demonstrated that tactical, operational and strategic supply chain decisions positively impact overall business performance. Of paramount importance are the findings denoting that tactical supply chain decisions insignificantly enhance overall business performance because of their short-term nature. The study concludes that understanding and effectively implementing tactical supply chain decisions can lead to a direct and significant impact on overall business profitability. To optimize tactical supply chain decisions to positively impact overall business profitability and ensure a competitive edge in the market, real estate managers can strategies encompassing the application of data-driven decision making, integrated supply chain planning, optimize inventory management, vendor and supplier collaboration, streamlined procurement processes, and efficient transportation and logistics methods.

KEYWORDS: Business profitability, real estate companies, tactical supply chain decisions, operational supply chain decisions, strategic supply chain decisions.

1. INTRODUCTION

Honour Supply chain decisions are vital for any business entity and their existence serve to ensure that the business continues to achieve stated goals. The demand for supply chain decisions is unending and continuously demands that managers be well equipped to make rational and effective decisions cost effectively. According to Miyare (2014), supply chain decisions are decisions that are made strategic choices and operational actions made by organizations to manage the production, procurement, transportation, storage, and distribution of goods and services throughout the entire supply chain. These decisions aim to optimize the flow of materials, information, and finances from the initial suppliers to end customers, ensuring that products are delivered efficiently, at the right time, and at an optimal cost. However, situations such as the need to achieve cost management and efficiency, choosing supplier relationships and sourcing strategies, manage supplier relationships and sourcing strategies, account for globalization and geopolitical factors, technological advancements, and customer demand and expectations are always at the centre of such decisions (Khosroshahi, Dimitrov & Hejazi, 2021; Lezoche et al., 2020; Sharma, Adhikary & Borah, 2020; Yan et al., 2020).

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In modern day business situations, the implications of supply chain decisions is of huge paramount importance amid a decline in profit earning capacity due to intensive competition between companies. One notable example of companies that have succumbed to such adverse effects is Kurdistan' real estate sector (Ali et al, 2021). Salih and Singh (2015) acknowledged that the real estate industry is a crucial sector in Kurdistan, contributing significantly to its economic growth and development. Effective supply chain management is vital for real estate companies to ensure streamlined operations, cost efficiency, and ultimately, enhanced profitability. By selecting real estate companies in Kurdistan, the study creates an avenue for analysing sustainability initiatives decisions essential for ethical considerations and responsible sourcing within the supply chain and aligning them with social and environmental responsibilities. Meanwhile, in the real estate sector, the supply chain encompasses procurement, construction, project management, and property management. Streamlining these processes is critical for timely project completion and cost control, ultimately affecting the profitability and success of real estate ventures.

Apart from being the first of its kind, studies linking the positive effects of tactical, operational and strategic supply chain decisions with business performance are in their infancy stages. Existing studies only go as far as analysing the contribution of strategic management accounting in supply chain outcomes and logistic firm profitability (Doktoralina & Apollo, 2019), green supply chain contracts with eco-labels issued by the sales platform: profitability and environmental implications (Guo, Cheng & Liu, 2020) and The relationship between green supply chain management and profitability (Allam et al., 2021). On geographical basis, studies are still yet to be extended to Kurdistan as they have been limited to Malaysia (Lee et al., 2022), Sweden (Cudjoe & Ibiyemi, 2015) and Kenya (Miyare, 2014). Furthermore, real estate companies have also been sidelined in such debates as evidence often points to manufacturing industries (Ibrahim, Zolait & Sundram, 2010; Lee et al., 2022) and medical industries (Cudjoe & Ibiyemi, 2015). As a result, there is a lack of depth about how and why the exact forms of supply chain decisions, especially tactical, operational and strategic supply chain decisions impact overall business performance. Therefore, this research aims to investigate the perceived influence of supply chain decisions on overall business profitability within the context of Kurdistan's real estate companies. In doing so, the study answers the following research questions:

1) What are the effects of tactical supply chain decisions on overall business profitability?

2) What are the effects of operational supply chain decisions on overall business profitability?

3) What are the effects of strategic supply chain decisions on overall business profitability?

This study contributes to the academic understanding of the role of supply chain decisions in real estate profitability, providing a foundation for further research in the field. Additionally, it offers practical insights to practitioners in optimizing supply chains for profitability in the real estate sector. On the other hand, real estate companies can make informed supply chain decisions based on the research findings, leading to improved operational efficiencies and profitability. Most importantly, insights into supply chain dynamics will aid in enhancing the competitiveness of Kurdistan's real estate industry on a regional and global scale.

2. LITERATURE REVIEW

In order to enhance understanding of supply chain decisions' impact on business profitability, we applied the Supply Chain Operations Reference (SCOR) Model. According to Ntabe et al. (2015), the SCOR model provides a comprehensive framework to analyze and measure the performance of supply chains. The SCOR Model categorizes supply chain decisions into Plan, Source, Make, Deliver, and Return processes. Analyzing how each of these processes impacts business profitability helps in understanding the overall influence of supply chain decisions in real estate companies. Ntabe et al. (2015) also highlights that the SCOR model defines standard performance metrics for each process, enabling organizations to measure their performance against industry benchmarks. This helps in evaluating the impact of supply chain decisions on real estate companies' profitability in comparison to industry standards. By integrating the SCOR model into profitability dynamics, we were able to ascertain how the SCOR facilitates an end-to-end view of the supply chain, encompassing both internal and external processes. As a result, this holistic view allows for a comprehensive analysis of how different supply chain decisions collectively influence business profitability across the entire supply chain. Moreover, by breaking down the supply chain into processes, SCOR helps in identifying bottlenecks and inefficiencies. Analyzing supply chain decisions in the context of these bottlenecks allows for targeted improvements that can enhance profitability by mitigating constraints. Other benefits such as establishing a standardized language and communication, customer-centric approach and supply chain agility and responsiveness in real estate companies are also highly conceivable when the SCOR model is applied. It is to the researchers' knowledge that the SCOR model had not been applied in analysing

supply chain decisions on business profitability. For such reasons, we intended to contribute to existing studies by using it to analyse how the SCOR model explains the interactive connections linking supply chain decisions and business profitability.

2.1 Supply chain management

By definition, supply chain refers to is a network of organizations, people, activities, information, and resources involved in the production, distribution, and delivery of goods and services from suppliers to consumers (Stadtler, 2014). In other words, it encompasses all the processes and steps needed to create and bring a product or service to the end-users. Hence, effective supply chain management involves optimizing processes from raw material acquisition to final product delivery, with the objective of minimizing costs and maximizing customer value. However, Plan, Source, Make, Deliver, and Return processes can be categorised into distinct supply chain decisions such as tactical, operational and strategic supply chain decisions. But the problem is that this has not been duly acknowledged in previous studies (Allam et al., 2021; Njoku & Kalu, 2015). Therefore, the current study's novelty and contributions are embedded in the categorisation of supply chain decisions into tactical, operational and strategic supply chain decisions and consequently their distinct impact on business profitability.

According to Easterby-Smith et al. (2021), tactical supply chain decisions play a critical role in influencing overall business profitability. These decisions are the medium-term actions that bridge the gap between strategic intent and operational execution. Based on Easterby-Smith et al. (2021), we can operationalise operational supply chain decisions as the day-to-day actions and activities that directly affect the movement, storage, and delivery of goods and services within the supply chain. These decisions significantly influence overall business profitability due to their direct connection with efficiency, cost-effectiveness, customer satisfaction, and resource management. Strategic supply chain decisions will also be operationalised based on Easterby-Smith et al.'s (2021) ideas as involving long-term planning and actions that align with the overall business strategy and goals. These decisions significantly impact overall business profitability by influencing the competitive position, cost structure, and customer value proposition of an organization.

Meanwhile, Njoku and Kalu, (2015) hold that effective supply chain management is a strategic tool for profitability enhancement in the competitive marketing environment. The relevance of such notions cannot be downplayed, especially when analysed in the context of real estate companies in Kurdistan that are going through a series of intense competition (Ali & Anwar, 2021). Apart from such notions, Allam et al. (2021) contend that a well-managed supply chain is essential for an organization's profitability as it impacts operational efficiency, reduces costs, and enhances customer satisfaction. Therefore, expectations are that tactical, operational and strategic supply chain decisions contribute to the improvement of business profitability. But there not much had been done to explore the impact of supply chain notably its decisions on profitability. It is in this regard that the next section examine previous related studies to unearth these interactive connections and test their validity within the context of Kurdistan's real estate companies.

2.3 Business profitability

Beyond traditional financial ratios, overall profitability involves a dynamic interplay of operational efficiency, strategic decision-making, and market responsiveness (Meehan et al., 2011). It encompasses the ability to adapt to market fluctuations, optimize resource allocation, and innovate to maintain a competitive edge. Additionally, drawing from Meehan et al. (2011), it is apparent to establish that overall business profitability extends beyond short-term gains, considering long-term financial sustainability and resilience in the face of economic uncertainties. Therefore, a comprehensive understanding of overall business profitability involves a holistic examination of financial performance, strategic alignment, and operational excellence. Meanwhile, in relation to the current study's context, the SCOR model provides a valuable theoretical lens through which to clarify the concept of overall business profitability. In the SCOR Model suggested by Ntabe et al., 2015, overall business profitability is intricately tied to supply chain performance across three key dimensions: Plan, Source, and Deliver. In other words, the SCOR framework underscores the interconnectedness of supply chain functions and their direct impact on overall business profitability, offering a theoretical foundation for understanding how supply chain dynamics contribute to the financial success of an organization.

2.4 Related studies and hypotheses development

Having argued in the previous section that tactical, operational and strategic supply chain decisions contribute to the improvement of business profitability, this section examines previous related studies to ascertain the extent and degree to which this holds and has been explored. Commencing with Miyare (2014), it was established that supply chain management utilises numerous strategies and tools to enhance profitability by reducing supply, finance and production costs. Hence, by virtue of tactical, operational and strategic decisions being an epitome of supply chain decisions, a

reduction in supply, finance and production costs is highly feasible when they are applied.

Njoku and Kalu (2015), discovered that effective supply chain management is a strategic tool for profitability enhancement in the competitive marketing environment. Thus by implication, both tactical, operational and strategic supply chain decision serve as strategic tools for enhancing profitability in any company and industry. This adds further weight to our argument proposing that tactical, operational and strategic decisions enhance profitability.

Cudjoe and Ibiyemi (2015) conducted a study that analyses ways of improving business performance in medical device manufacturing companies through supplier relationships. In that context, the strategic implementation of tactical, operational and strategic decisions as part of managing companies' supplier relationships will have a profound positive impact on business performance.

Ideas by Doktoralina and Apollo (2019) add depth to our analysis and further insights reveal that the exact connection linking supply chain decisions and profitability is still gathering momentum in academic studies. Doktoralina and Apollo's findings reveal that strategic management accounting enhances supply chain outcomes and logistic firm profitability. However, the interactive connections pertaining to this study were not covered in their study. Furthermore, the existence of mediating and moderating factors was overruled. Thus, to set a foundation for establishing both mediating and moderating factors, this study will be the first to examine the individual effects of tactical, operational and strategic decisions on profitability through an estimated regression model.

In another context, Guo, Cheng and Liu (2020) a novel concept of green supply chain contracts with eco-labels issued by the sales platform were analysed and their impact on profitability and environmental implications was assessed. Their findings showed that green supply chain enhances profitability and poses huge environmental implications. This observations carry huge relevance to Kurdistan's real estate company whose profitability and environmental implications are instrumental to Kurdistan's economic and social development as well as sustainable development.

In the contemporary landscape of global business, Panfilova et al. (2020) assert that the strategic orchestration of supply chain management decisions stands as a critical determinant of organizational success. On another aspect, Jacobs and Chase (2018) opine that supply chain decisions, ranging from tactical maneuvers to operational intricacies, intricately shape the trajectory of businesses. Thus, by deftly navigating procurement, logistics, and distribution channels, companies can not only optimize operational efficiency but also directly influence the overarching goal of profitability. This nexus between supply chain decisions and financial outcomes underscores the necessity for businesses to engage in holistic strategic planning. From fine-tuning procurement processes to optimizing inventory management, Liu et al. (2014) attest that every facet of supply chain decision-making plays a pivotal role. As businesses strive for competitiveness and resilience, understanding and implementing strategic supply chain decisions emerge as a linchpin for sustained growth, operational excellence, and ultimately, enhanced profitability. This article delves into the multifaceted realm of supply chain management decisions, unraveling their strategic implications and offering insights into how businesses can leverage these decisions for sustained financial success.

To further reinforce the notion that positive effects spanning from tactical, operational and strategic supply chain decisions to business profitability in any company and industry, Anggraini and Tanjung (2020) highlighted that sustainable supply chain has significant effects on profitability and that the effects are influenced by company values and industrial profile. Given limited studies and the limitedness of scope to manufacturing industry (Ibrahim, Zolait & Sundram, 2010; Lee et al., 2022) and medical industries (Cudjoe & Ibiyemi, 2015), one can underscore the importance of such implications when analysed within the context of real estate companies. Meanwhile, Allam et al. (2021) discovered that green supply chain is essential for achieving targeted economic and market objectives while reducing environmental risk, reducing cost, optimizing resources and enhancing operations throughout the supply chain. Lee et al. (2022) analysed the effect of digital supply chain on organizational performance in Malaysia manufacturing industry. A positive effect was observed and this reinforces our study notion that various forms of supply chain decisions contribute to improving profitability. Such observations are in line with the SCOR model that categorizes supply chain decisions into Plan, Source, Make, Deliver, and Return processes.

To further add weight to the current study's purported relationships linking tactical, operational and strategic supply chain decisions with overall business profitability, theoretically the SCOR Model emphasizes the importance of agility and responsiveness in the supply chain (Ntabe et al., 2015). Tactical decisions, such as inventory management, production scheduling, and distribution planning, play a crucial role in ensuring that the supply chain is efficient and responsive to changes in demand. Hence, an agile and responsive supply chain can minimize stockouts, reduce excess inventory, and enhance overall operational efficiency, contributing to increased profitability. As a result, the SCOR Model indirectly supports the hypothesis that tactical supply

chain decisions have a positive impact on overall business profitability by emphasizing efficiency, optimization, collaboration, risk mitigation, and customer satisfaction. Meanwhile, similar inferences can be drawn from Ntabe et al. (2015) that organizations that strategically make and implement tactical decisions aligned with the principles of the SCOR Model are likely to experience improved supply chain performance, cost savings, and ultimately, increased profitability. Concerning operational supply chain decisions, infrerences drawn from Ntabe et al. (2015) shows that organizations that implement operational decisions aligned with SCOR principles are better positioned to enhance their supply chain performance and contribute to improved profitability. Likewise, organizations that make informed strategic decisions within the SCOR framework are better positioned to create competitive advantages that contribute to profitability. In light of these theoretical insights the following hypotheses were formulated.

- H1: Tactical supply chain decisions have a positive effect on overall business profitability.
- H2: Operational supply chain decisions have a positive effect on overall business profitability.
- H3: Strategic supply chain decisions have a positive effect on overall business profitability.

Secondarily, despite the main goal of the study being centred on effects, the following hypothesis can be proposed in relation to the correlation between tactical, operational and strategic supply chain decisions and overall business profitability.

- H1a: Tactical supply chain decisions are positively correlated with overall business profitability.
- H2a: Operational supply chain decisions are positively correlated with overall business profitability.
- H3a: Strategic supply chain decisions are positively correlated with overall business profitability.

2.5 Conceptual model

From the conceptual model presented in Figure 1, arrows spanning from tactical, operational and strategic supply chain decisions to overall business performance indicate the purported effects of supply chain decisions on the real estate companies' overall performance. Hence, the regression model forms the basis on which the formulated hypotheses were tested. Upon such establishments, a regression model was deemed fit to test such effects. As a result, the next section of the study provides a detailed description of the methodological procedures taken to analyse the collected data and estimate the regression model.

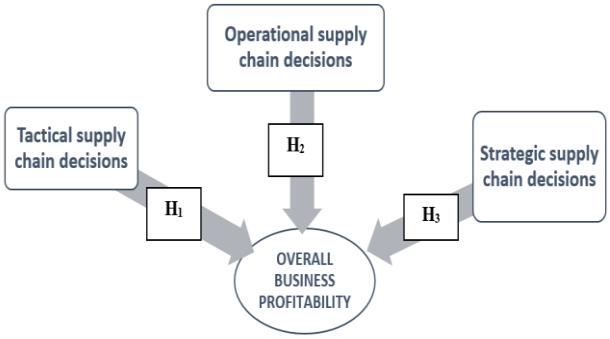

Fig. 1. Conceptual Model

3. METHODOLOGY

As highlighted, ideas about Kurdistan, especially about its real estate companies and how their supply chain decisions impact their overall performance have been excluded in academic studies. Hence, with limited insights, existing judgements are most likely to be skewed and clouded. Thus, this study addresses such voids and a list of procedures undertaken to execute such methods and procedures are given in this section. Most importantly, a quantitative research analysis was adopted because of reasons such as efficiency and time-saving, objective and measurable data, generalizability and representative sampling, statistical analysis and inference, and reliability and replicability (Bloomfield & Fisher, 2019).

3.1 Study participants and sampling methods

The study engages Kurdistan real estate companies' supply chain managers, project managers, procurement officers, and executives involved in decision-making processes in Erbil. This is because their combined perspectives offer a holistic view of the topic as each stakeholder group brings unique expertise and perspectives related to supply chain decisions. Supply chain managers, project managers, and procurement officers have firsthand knowledge of supply chain operations, while executives provide strategic insights. Moreover, involving stakeholders from Erbil's real estate companies ensures that the study is grounded in the specific regional context. The study population was drawn from Bakhtiari, Kuran Ankawa, Brayaty, Khabat and Azadi districts that are at the periphery of Erbil city and huge number of real estate companies are widely situated in these districts. Besides, selecting these districts enabled the researcher to have a wide and robust understanding of supply chain dynamics based on different geographical contexts. A total convenient sample of 20 major and famous real estate companies were randomly selected from 5 districts of Erbil. These companies are the key players in the local market, representing significant market share and influence (names with held for privacy and confidentiality

purposes). Sampling from these companies provides insights into the practices and trends that are influential in the real estate sector. Moreover, by studying their practices, the research can gain a comprehensive understanding of current trends, innovations, and challenges within the real estate sector. Most impoprtantly, the findings from major and famous real estate companies can be generalized to similar companies within the industry.

To determine the study population, the study conveniently selected relavant individuals whose ideas are pertinent to the study of supply chain decisions' effects on overall profitability. As a result, 4 questionnaires were given to each company to cater for supply chain managers, project managers, procurement officers, and executives' perceptions about supply chain decisions and company profit. This is because their roles within a company plays a unique and critical part in supply chain decision-making. Thus, by gathering perceptions from supply chain managers, project managers, procurement officers, and executives, the study aims to obtain a holistic understanding of the supply chain dynamics within the real estate companies. Given that we applied a convenience sampling approach, this entails that the total of 80 questionnaires were distributed per district resulting in a total sample of 400 participants.

3.2 Data collection

A structured questionnaire was developed to collect data on supply chain decisions and their perceived influence on overall business profitability. The questionnaire included closed and open-ended questions to gather both quantitative and qualitative insights. Related studies were used in constructing the supply chain decisions and business profitability constructs (Cudjoe & Ibiyemi, 2015; Ibrahim, Zolait & Sundram, 2010; Lee et al., 2022; Miyare, 2014). However, as a novel contribution to existing studies, we modified the supply chain constructs to produce 30 tactical, operational and strategic supply chain decisions constructs. 15 business profitability constructs were also developed. Both constructs were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). In order to avoid a Likert scale crush, we conducted a focus group with 1 supply chain manager and 2 project managers. The results were satisfactory and as a result, we proceeded to distribute the questionnaires.

3.3 Data Analysis

The collected data were analyzed using regression analysis and correlation analysis to identify effects together with their magnitude and ascertain the correlations between supply chain decisions and business profitability. In support of this, Lawrence (2019) underscores that regression is well poised to provide detailed insights into the relationships between two or more variables, which is the core focus of this study. Besides, such a model was yet to be applied in modelling tactical, operational and strategic supply chain decisions' impact on overall performance. Hence, the study is the first of its kind to model such relationships. Furthermore, the application of regression analysis though proven to be reliable and robust in related prior studies (Cudjoe & Ibiyemi, 2015; Ibrahim, Zolait & Sundram, 2010; Lee et al., 2022; Miyare, 2014), it was yet to be applied within the exact context of Kurdistan. Most studies are confined to countries such as in Malaysia (Lee et al., 2022), Sweden (Cudjoe & Ibiyemi, 2015) and Kenya (Miyare, 2014). In addition, related examinations have been restricted to industries like manufacturing industry (Ibrahim, Zolait & Sundram, 2010; Lee et al., 2022) and medical industries (Cudjoe & Ibiyemi, 2015). As a result, real estate companies' role in such studies had been severely neglected. Therefore, to fill such gaps, this scholarship will apply a regression model in analysing the impact of tactical, operational and strategic supply chain decisions' impact on overall performance within the context of Kurdistan's real estate companies.

To model the regression model, we presumed that Overall Business Profitability (OBP) is a function of Tactical Supply Chain Decisions (TSCD), Operational Supply Chain Decisions (OSCD), and Strategic Supply Chain Decisions (SSCD). This can be expressed in a functional form as follows:

$$OBP = f(TSCD; OSCD; SSCD) \quad (1).$$

We used expression (1) to develop a regression model by integrating a constant (α), parameters (β_1to 〖 β〗 _3) and an error term (μ) as follows:

$$OBP = \alpha + \beta_1 TSCD + \beta_2 OSCD + \beta_3 SSCD + \mu \quad (2).$$

The regression model was assessed for misspecification using the F-statistic test. Additional test such as multi-collinearity and serial correlation were also performed. Meanwhile, factor analysis was conducted prior to estimating the regression model and the decision was to select variables with factor loadings of at least 0.50 as reliable (Shrestha, 2021). To assess the reliability of the model variables, Cronbach's alpha test was applied. As such, variables with alpha values of at least 0.7 were considered (Amirrudin, Nasution & Supahar, 2021). All statistical tests were performed using SPSS version 26.

4. RESULTS AND ANALYSIS

The results of the study are based on a cluster analysis of 362 responses collected from real estate companies'

supply chain managers, project managers, procurement officers, and executives involved in Bakhtiari, Kuran Ankawa, Brayaty, Khabat and Azadi districts of Erbil city. Thus, the study's responses rate is 90.5%, which is high enough to provide an accurate description of supply chain and business profitability interactive connections in Kurdistan's real estate companies.

Demographics of participants

According to the presented Table 1 results, 61.33% of the respondents were male employees while female employees constituted 38.67% of the respondents. The findings shows that the respondents were possibly mature enough to comprehend the examined supply chain and business performance dynamics as evidenced by the age groups of 18-25 years (9.39%), 26-33 years (49.17%), 34-41 years (16.57%), 42-49 years (20.44%) and 50 years and above (4.43%). A further highlight of the study is that these respondents were also highly qualified (Bachelor's degree: n=142; Master's degree: n=206; Ph.D: n=14). This possibly entails that understanding of supply chain and business performance dynamics and initiatives were easily comprehended by the respondents.

The collected opinions were largely dominated by insights provided by supply chain managers (n=93) and procurement officers (n=100). A large percentage of these respondents were from Bakhtiari district (22.10%) and Kuran Ankawa district (22.10%) while Brayaty district had the least number of respondents (60). In overall, the respondents' demographics indicate that the provided supply chain and business performance dynamics and initiatives were to a large extent well poised to offer good insights about real estate companies in Erbil, Kurdistan.

TABLE 1 A Description of the Study Participants

Variable	Description	Frequency	Percentage
Gender	Male	222	61.33
	Female	140	38.67
	Total	**362**	**100**
Age	18-25 years	34	9.39
	26-33 years	178	49.17
	34-41 years	60	16.57
	42-49 years	74	20.44
	50 years and above	16	4.43
	Total	**362**	**100**
Academic qualification	Bachelor's degree	142	39.24
	Master's degree	206	56.91
	Ph.D	14	3.87
	Total	**362**	**100**
Work experience	Less than 1 year	8	2.21
	1-3 years	36	9.95
	4-6 years	76	20.99
	7 years and above	242	66.85
	Total	**362**	**100**
Position	Supply chain managers	93	25.69
	Project managers	88	24.31
	Procurement officers	100	27.62
	Executives	81	22.38
	Total	**362**	**100**
Location (district)	Bakhtiari district	80	22.10
	Kuran Ankawa district	80	22.10
	Brayaty district	60	16.57
	Khabat district	70	19.34
	Azadi district	72	19.89
	Total	**362**	**100**

4.2 Factor analysis

By applying factor analysis, our goal was to determine, which of the variable constructs were related and should be included in investigating the perceived influence of supply chain decisions on real estate companies' overall business profitability in Kurdistan. According to Table 2, the regression model will be estimated using 8 tactical supply chain decisions constructs, 11 operational supply chain decisions constructs, 5 strategic supply chain decisions constructs, and 8 Overall business performance constructs. This is because their factor loadings are at least 0.50 as required in academic studies (Shrestha, 2021).

TABLE 2 Factor analysis

Tactical supply chain decisions			Operational Supply Chain Decisions		
No.	**Construct**	**FL**	**No.**	**Construct**	**FL**
6	We use data analytics to forecast demand accurately and plan production accordingly.	0.81	**1**	Our operational decisions emphasize process automation to enhance speed and accuracy in supply chain activities.	0.65
8	Our production decisions are structured to maximize throughput while maintaining high product quality.	0.80	**2**	Our daily warehousing and storage decisions are structured to maximize space utilization and accessibility.	0.59
10	We regularly review and optimize supplier contracts to ensure favorable terms and cost savings.	0.78	**3**	We efficiently manage reverse logistics to minimize costs associated with returns and exchanges.	0.74
11	Our transportation decisions prioritize efficiency and timeliness to enhance overall supply chain performance.	0.79	**4**	Flexibility in production decisions allows us to quickly adapt to changing demand patterns and customer needs.	0.71
12	We actively assess and modify inventory levels to meet demand fluctuations and minimize holding costs.	0.74	**5**	Our daily procurement decisions are guided by a focus on cost-efficiency and supplier reliability.	0.78
13	The procurement strategies in our supply chain are aligned with cost-effectiveness and quality enhancement.	0.73	**6**	We regularly track and analyze key performance indicators to evaluate operational efficiency and effectiveness.	0.66
14	Collaborative planning with suppliers and distributors is a fundamental aspect of our supply chain strategy.	0.76	**7**	We monitor and manage daily production schedules to optimize resource utilization and meet deadlines.	0.72
15	Our supply chain network design decisions are oriented towards minimizing logistics costs and lead times.	0.74	**8**	Our order processing and fulfillment decisions are streamlined to minimize delays and errors.	0.70
			9	We maintain effective communication and coordination with suppliers to ensure smooth operational flow.	0.77
			10	Our transportation decisions effectively balance speed, cost, and reliability in the delivery process.	0.78
			11	The day-to-day inventory management decisions align with our overall supply chain goals and objectives.	0.80
Overall business performance			**Strategic Supply Chain Decisions**		
2	The relationship with the suppliers has an impact on procurement and transaction cost.	0.66	**1**	The strategic integration of automation and artificial intelligence in our supply chain processes enhances our competitive advantage and profitability.	0.76
3	Key suppliers give price concessions and this provides opportunities for the company to produce more to the market.	0.73	**2**	We invest in advanced technologies and information systems strategically to boost overall supply chain efficiency and profitability.	0.80
6	Our relationship with suppliers affects our market share.	0.72	**3**	Our strategic decisions in supplier selection aim to optimize cost, quality, and reliability for sustainable profitability.	0.85
7	Our relationship with key suppliers affects the cost of our materials.	0.79	**5**	Sustainability considerations play a key role in our strategic supply chain decisions to enhance brand image and competitiveness.	0.84
8	To achieve cost reduction from our suppliers, we use negotiations, discounts and tendering methods.	0.76	**7**	Our supply chain network design decisions are aligned with long-term business profitability goals.	0.82
9	Our relationship with suppliers improves the time to market of our products.	0.82	**9**		
10	Key suppliers are effective in ensuring orders are shipped and delivered on schedule.	0.80	**10**		
11	Supplier relationship help reduce operational down times.	0.71	**11**		

FL: Factor loading

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4.3 Model tests

4.3.1 Multi-colinearity test

Table 3 shows the Variance Inflation Factor (VIF) results conducted on OBP, TSCD, OSCD and SSCD. According to Kalnins and Praitis Hill (2023), the VIF values must be less than 3 for the model to be free from multi-collinearity problems. As such, the results provide evidence that no multi-collinearity problems were observed.

TABLE 3 Multi-collinearity Test

Variable	Collinearity tolerance	VIF
TSCD	0.874	0.936
OSCD	0.874	0.936
SSCD	0.999	1.001

4.3.2 Serial correlation test and normality test

Further tests were conducted to detect serial correlation using the Durbin Watson test and the provided value is close to 2 indicating that there were no serial correlation problems affecting the model. As an addition, the model was checked to ascertain if it was normally distributed and normality was observed across the entire model as noted by a Jarque-bera statistic of 7.362 that is associated with a probability value of 0.000. Amid such observations, we accepted the alternative hypothesis denoting that the model variables are normally distributed (Lawrence, 2019).

TABLE 4 Serial Correlation and Normality Tests

Serial correlation test	Normality test	
Durbin Watson	Jarque-bera	Probability
1.986	7.362	0.000

4.3.3 Linearity test

The variables' ability to display normally distributed properties cannot be refuted as depicted in Figure 1. The model follows a linear pattern hence leading to the conclusion that the estimated model satisfies all the required regression analysis assumptions.

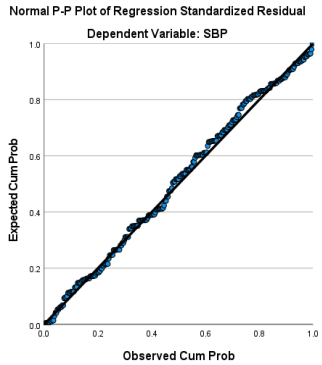

Fig. 1. Linearity normal P-P plot of regression standardised residuals

4.3 Reliability test

As per Table 5's findings, the Cronbach's alpha values are at least 0.70 thereby signifying a high level of internal consistency (Amirrudin, Nasution & Supahar, 2021). That is, with Cronbach's alpha values of 0.782 (TSCD), 0.840 (OSCD), 0.801 (SSCD) and an overall reliability of 0.808, the estimated model is highly reliable. It is upon these successful establishments that we proceeded to interpret the regression analysis results.

TABLE 5 Reliability Tests

Variable	Cronbach's alpha
TSCD	0.782
OSCD	0.840
SSCD	0.801

4.4 Correlation coefficient

A Correlation test was performed using the Pearson correlation coefficient test. The results presented in Table 6 show that overall business profitability is positively and significantly correlated with TSCD (corr:=0.33), OSCD (corr:=0.58) and SSCD (corr:=0.64). Therefore, hypotheses 1a (tactical supply chain decisions are positively correlated with overall business profitability, 2a (operational supply chain decisions are positively correlated with overall business profitability, and 3a (strategic supply chain decisions are positively correlated with overall business profitability) were validated. This entails that improvements in the real estate companies' tactical, operational and strategic supply chain decisions is positively associated with an increase in their profitability. Most importantly, Strategic Supply Chain Decisions (SSCD) have a highly correlated with business profitability as the long term period allows companies to flexibly adjust their capacity to enhance

business performance. However, the correlation between business profitability and TSCD is significant at 0.05 level compared to OSCD and SSCD that are significant at 0.01 level. This is because the supply chain decisions and their impact on profitability might inherently have a certain level of variability, making it challenging to establish a stronger relationship at a 1% significance level.

TABLE 6 Correlation Coefficient Test

	OBP	TSCD	OSCD	SSCD
OBP	**1**			
TSCD	0.33**	**1**		
OSCD	0.58*	0.47*	**1**	
SSCD	0.64*	0.52*		**1**

Dependent variable: OBP: **Independent variables:** TSCD; OSCD; SSCD

* and ** significant at 0.01 and 0.05 levels

Both TSCD, OSCD and SSCD and positively and significantly correlated with each other at 0.01 level. This entails that improvements in one form of supply chain decision will mostly be associated with improvements in the other supply chain decisions. In overall, the real estate companies' supply chain decisions can be said to be positively contributing to improved business performance.

4.5 Perceived influence of supply chain decisions on profitability

The current study's goal was to ascertain the impact of the yet to be modelled tactical, operational and strategic supply chain decisions on overall business profitability. To achieve this goal, a multiple regression model was estimated and the results are presented in sections as follows:

4.5.2 Model summary

According to the provided Table 7 model summary results, 81% of the changes in the real estate companies' overall business profitability is explained by TSCD, OSCD and SSCD. An insignificant difference of 0.05 between R Square and the Adjusted R Square entails that the model is correctly specified.

TABLE 7 Model Summary

Explanatory power		ANOVA test results	
R Square	Adjusted R Square	F statistic	Sig.
0.81	0.76	11.573	0.000

Furthermore, the ANOVA F-statistic of 11.573 is significant at 1% (probability=0.000), which reinforces the notion that the model has no outliers and is correctly specified.

4.5.3 Regression analysis

In our attempt to analyse the perceived influence of supply chain decisions on overall business profitability, we found that TSCD has an insignificant impact on overall business profitability of 0.060. This entails that a 1 unit improvement in the real estate companies' tactical supply chain decisions causes business profitability to increase by 0.060 units. On the other hand, OSCD and SSCD positively impacted the real estate companies' overall business profitability by 0.130 (prob.=<0.001) and 0.186 (prob.=<0.001). Consequently, hypothesis 1 was rejected while hypotheses 2 and 3 were accepted. A summary of the model results is provided in Table 8 and it is from these results that the discussion of findings was made.

TABLE 8 Regression Analysis

	Unstandardised coefficients beta	Standardised error	Standard coefficients beta	t.	Sig.
α	2.918	0.276		10.588	<0.001
TSCD	0.060	0.051	0.096	1.182	0.239
OSCD	0.130	0.042	0.160	3.112	<0.001
SSCD	0.186	0.051	0.189	3.625	<0.001

Dependent variable: Overall Business Profitability (OBP)
Independent variables: TSCD; OSCD; SSCD

Inferences were drawn using a summary of findings presented in Table 9. Additionally, the study's theoretical and practical implications were thus, drawn from Table 9 results and this was conducted after discussions were made in reference to prior related studies.

TABLE 9 Summary of the Regression Analysis Results

No.	Hypothesis	Test method	Probability	Decision
1	Tactical supply chain decisions have a significant impact on overall business profitability.	Multiple Regression	0.239	**Reject**
2	Operational supply chain decisions have a significant impact on overall business profitability.	Multiple Regression	<0.001	**Accept**
3	Strategic supply chain decisions have a significant impact on overall business profitability.	Multiple Regression	<0.001	**Accept**

DISCUSSION

Given that the study is the first of its kind to investigate the perceived influence of supply chain decisions on overall business profitability, no framework has been used to assess tactical supply chain decisions' impact on overall business profitability in real estate companies. Thus, by rejecting hypothesis 1, the study adds to existing knowledge by highlighting that such effects are positively insignificant with a magnitude of 0.060. Such effects were not analysed in manufacturing companies (Ibrahim, Zolait & Sundram, 2010; Lee et al., 2022) and medical industries (Cudjoe & Ibiyemi, 2015). However, such observed effects are as a result of cost optimization, efficient resource allocation, customer satisfaction and loyalty, improved speed and agility, optimized inventory levels, and risk mitigation in Kurdistan's real estate companies. As a result, this directly translates to improved profitability.

Second on the note are the observed operational supply chain decisions' significantly positive effects of 0.130. This is possibly attributed to real estate companies' effective cost efficiency, resource utilization, customer service and loyalty, supply chain flexibility and responsiveness, order fulfillment speed, accuracy and quality, and inventory accuracy and availability strategies. Thus, in the medium term, these strategies lead to cost savings, wastage minimisation, output maximisation, disruption minimisation, improved resource productivity, and customer experience enhancement contributing to enhanced profitability. This reinforces the SCOR model focus to identify bottlenecks and inefficiencies (Ntabe et al., 2015). Analyzing supply chain decisions in the context of these bottlenecks allows for targeted improvements that can enhance profitability by mitigating constraints. Hence, we accept hypothesis 2 and hold that operational supply chain decisions have a significant impact on overall business profitability in Kurdistan's real estate companies. This observations were not captured in countries such as Malaysia (Lee et al., 2022), Sweden (Cudjoe & Ibiyemi, 2015) and Kenya (Miyare, 2014). As a result, the study enriches existing supply chain management and business performance studies by providing sector and country-specific details that unclogs business performance judgements.

Lastly, the findings revealed that strategic supply chain decisions positively impact overall business profitability in a significant manner by 0.186. Unlike other studies that give a general systematic literature view (Allam et al., 2021; Doktoralina & Apollo, 2019; Guo, Cheng & Liu, 2020; Njoku & Kalu, 2015), this study is the first to uncover such effects within the context of Kurdistan's real estate companies. Furthermore, this validates the SCOR model that defines standard performance metrics for each process, enabling organizations to measure their performance against industry benchmarks. Because of their long-term nature, strategic supply chain decisions positively impact business performance through cost efficiency and savings, market responsiveness and flexibility, customer value and differentiation, risk mitigation and resilience, strategic supplier relationships, product lifecycle management, sustainable practices and reputation. This is relatively similar to mid-term decisions existing in the form of operational supply chain decisions but with a significantly huge focus on long-term goals. For such reasons, this leads to effective strategic supply chain decisions that enable organizations to optimize costs across the supply chain network. Effective sourcing, distribution network design, and supplier management will also lead to cost savings and improved profitability, market responsiveness and flexibility. Additionally, under such cases, the alignment of supply chain strategy with the business strategy will ensure that the supply chain can quickly respond to changes in market demand and consumer preferences. Moreover, this enhances customer satisfaction and improves the companies' reputation and attract environmentally conscious consumers. In overall, all these benefits work to improve profitability.

CONCLUSION

This research underscores the critical role of supply chain decisions in influencing the overall profitability of real estate companies in Kurdistan. In conclusion:

1) Understanding and effectively implementing tactical supply chain decisions can lead to a direct and significant effect on overall business profitability. A

strategic focus on comprehending and adeptly executing tactical supply chain decisions emerges as a linchpin for augmenting overall business profitability. The discernment of nuanced operational intricacies, efficient resource allocation, and meticulous planning within the tactical spectrum reverberates throughout the entire business framework, driving a direct and substantial positive impact on the financial health and sustainability of the organization.

2) Operational supply chain decisions have a positive and significant effect on overall business profitability. The intrinsic link between operational supply chain decisions and the overarching profitability of the business becomes unmistakably apparent. Through meticulous orchestration of day-to-day operations, including procurement, distribution, and logistics, businesses can strategically enhance their financial performance. This positive and substantial effect underscores the pivotal role that operational decisions play in fortifying the bottom line, contributing to sustained growth, and fostering a resilient business framework.

3) Strategic supply chain decisions have a profound effect on overall business profitability by optimizing costs, enhancing customer value, mitigating risks, and aligning with business goals. As such, they can lead to cost savings, improved operational efficiency, and enhanced competitiveness, ultimately positively impacting business profitability. Thus, through informed and well-executed strategic decisions, organizations can achieve sustainable profitability and long-term success.

Given the above inferred conclusions, the following recommendations were suggested:

1) To optimize tactical supply chain decisions to positively impact overall business profitability and ensure a competitive edge in the market, real estate managers can strategies encompassing the application of data-driven decision making, integrated supply chain planning, optimize inventory management, vendor and supplier collaboration, streamlined procurement processes, and efficient transportation and logistics methods.

2) Managers must focus on improving efficiency, cost-effectiveness, customer satisfaction, and resource optimization in operational decisions. This can help businesses to enhance their bottom line and maintain a competitive edge in the market.

3) There is a need to ensure that operational decisions and activities align with the strategic supply chain decisions to achieve organizational goals and maintain a competitive edge.

Insights gained from the study can guide supply chain managers in making informed tactical decisions to optimize costs, streamline operations, and ultimately enhance profitability. Practical implications may emphasize the importance of leveraging advanced technologies to aid tactical decision-making and drive efficiency within the supply chain, ultimately impacting profitability positively. Findings from the study can be used to streamline and optimize operational processes within the supply chain, leading to increased efficiency and cost savings, which positively impact profitability. Theoretically, integrating operational insights with strategic supply chain management theories can provide a more comprehensive understanding of the interplay between strategic goals and daily operational decisions. Additionally, bridging the gap between overall business strategy and supply chain strategy can enhance theoretical frameworks that encompass both macro and micro perspectives in strategic management.

Suggestions for future research

Bridging the gap between strategic and operational levels, focusing on tactical decisions, can enhance theoretical frameworks that consider both macro and micro perspectives in supply chain management. Furthermore, future studies must conduct case studies or industry-specific analyses to quantify the impact of operational supply chain decisions on Key Performance Indicators (KPIs) related to profitability. Along similar lines, there is a need to utilise data analytics to study a real-world dataset of supply chain operations, identifying patterns and correlations between operational decisions and financial outcomes.

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