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Can strategic sourcing drive supply chain agility? A field investigation

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Abstract

This study examines at how supply chain agility (SCA), which is evaluated by flexibility, speed, responsiveness, and efficiency in commercial organizations, is affected by strategic sourcing (SR), which is represented by internal integration, supplier development, information exchange, and strategic purchasing. used SmartPLS 4 for structural equation modeling (SEM) with a sample of 166 participants that included managers from supply and procurement departments in several Arab nations. The study's findings showed that supply chain agility was significantly impacted by strategic sourcing. Findings showed that every aspect of supply chain agility was highly impacted by every aspect of strategic sourcing. Both supply chain agility and strategic sourcing attracted a lot of interest from commercial businesses. To increase supply chain speed and efficiency, the study suggests investing in digital technologies, strengthening internal cross-departmental integration, putting supplier development programs into place, and improving information-sharing mechanisms. The study recommends broadening the scope to include other economic sectors and investigating moderating factors like organizational culture and digital transformation for future research.

Keywords: Efficiency, Flexibility, Information sharing, Internal integration, Responsiveness, Speed, Strategic purchasing, Strategic sourcing, Supplier development, Supply chain agility.

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1. Introduction

In today's unstable and uncertain business environment, the relationship between supply chain agility and strategic sourcing is more important than ever. Businesses are under increasing pressure to guarantee supply chain flexibility and responsiveness as global markets rapidly change because of political upheavals, technological breakthroughs, and unanticipated disruptions like pandemics or natural disasters. Strategic sourcing is essential in this situation because it helps businesses adjust to change and improve supply chain flexibility.

Thanks to developments in software technology, strategic sourcing has changed significantly over the last 20 years. Initially restricted to simple electronic negotiation tools, it has developed into complex systems that simplify the entire strategic sourcing process, such as supplier relationship management (SRM) and contract lifecycle management (CLM). These developments have enabled businesses to transition from antiquated, manual procurement techniques—which frequently relied on faxes and emails—to a contemporary, value-driven strategy. The current method is much more complex, focusing on finding the best sourcing opportunities while carefully weighing the costs, advantages, and risks across local, regional, and international supplier networks [1].

In order to optimize organizational value, large and medium-sized businesses use strategic sourcing, which includes the methodical selection, development, qualification, and engagement of suppliers. Traditional methods frequently rely on localized supply networks or a limited supplier base, but there are those who cautions that these tactics present serious risks during disruptions [2]. His framework distinguishes between supply chains that are intended for responsiveness (adapting to demand variability) and those that are "efficient" (focused on cost minimization). Flexible supply chains that can react quickly to unstable markets, identifying agility as a critical capability. He links logistics optimization, information systems, and organizational design to agility [3].

This study examines how supply chain agility in commercial enterprises is improved by strategic sourcing practices, with a focus on evaluating their contribution to increased agility in dynamic market conditions.

1.1. Study Problem and Questions

In today's dynamic and unpredictable global market, large and medium-sized commercial enterprises face significant challenges in maintaining supply chain agility, including flexibility, responsiveness, and efficiency, while quickly adapting to technological advancements and unpredictable fluctuations in demand. Enhancing these aspects of supply chain agility requires strategic sourcing, which includes important dimensions like information sharing, supplier development, internal integration, and strategic purchasing. Nevertheless, many businesses find it difficult to use these factors to create flexible supply chains that can sustain long-term organizational competitiveness.

The purpose of this study is to investigate how supply chain agility in businesses can be enhanced through strategic sourcing. The study looks at how supplier development, information sharing, internal integration, and strategic purchasing can improve adaptability, responsiveness, and efficiency.

Based on the above, the research problem can be defined through the following questions:

What is the impact of strategic sourcing on supply chain agility in commercial enterprises?

What is the impact of strategic sourcing on supply chain flexibility in commercial enterprises?

What is the impact of strategic sourcing on supply chain speed in commercial enterprises?

What is the impact of strategic sourcing on supply chain responsiveness in commercial enterprises?

What is the impact of strategic sourcing on supply chain efficiency in commercial enterprises?

What is the level of focus on strategic sourcing in commercial enterprises?

What is the level of focus on supply chain agility in commercial enterprises?

1.2. Theoretical Framework

1.2.1. Strategic Sourcing

Strategic sourcing is the process of identifying long-term supply requirements, sourcing solutions to meet these needs, selecting suppliers to provide services, negotiating purchase agreements, and managing supplier performance. It focuses on developing the most effective relationships with suitable suppliers to ensure fair pricing and reduce the total product cost over its lifecycle [4]. It also involves evaluating whether services or processes would deliver greater value if outsourced to specialized providers.

Strategic sourcing is a procurement management procedure meant to find and work with suppliers who maximize the value of a company's goods or services. It necessitates proactive planning for supply chain operations and places a strong emphasis on cooperation with suppliers in line with strategic and operational goals [5].

Supplier selection is essential to supply chain excellence because suppliers must help reduce costs, accelerate time-to-market, mitigate risks, improve quality, and provide flexible technical and engineering support. Strategic sourcing is intended to optimize the value of each procurement transaction through cost savings, value-added services, risk reduction, or improved supplier relationships, in contrast to standard purchasing activities like price quotations, logistics, and quality inspections. Above all, it is a dynamic process that develops and adjusts to shifting organizational requirements [1].

Strategic sourcing is a dynamic approach that improves sustainability and adaptability in unstable business environments rather than just being an administrative supply management procedure. It encourages long-term strategic alliances that promote deep integration between suppliers and organizations, going beyond conventional supplier selection. Innovation and a competitive edge are sparked by this integration. Additionally, data analytics and innovative technologies are essential for improving decision-making and reducing risks. Strategic sourcing becomes a potent tool for improving

supply chain agility, bolstering responsiveness to market disruptions, and facilitating proactive adaptation to changing circumstances by utilizing digital tools.

Strategic sourcing is now positioned as a vital facilitator of flexible, future-ready supply chains that can manage uncertainty while upholding operational excellence.

1.3. Strategic Sourcing Dimensions

Information sharing, supplier development, strategic purchasing, and internal integration are the four dimensions of strategic sourcing that have been identified by numerous studies. Many research results support these dimensions [6-10]. As demonstrated by the research of other studies have concentrated on a single dimension, such as buyer-supplier relationships [11-13]. Alternative dimensions have been suggested by some researchers in the interim. Another researcher investigated strategic purchasing, supplier relationships, cross-functional representation (internal integration), and effective leadership [14] while another Wach looked at e-procurement and supplier improvement (supplier development) [15].

Because they improve coordination, supply sustainability, transparency, and purchasing efficiency, this study implements the four main dimensions: internal integration, supplier development, information sharing, and strategic purchasing. Together, these factors increase the flexibility and agility of the supply chain.

1. Internal Integration: Internal integration is an organizational system that facilitates timely access to cross-departmental data by unifying internal functions. Effective information gathering to support decision-making processes is made easier by this integration. Coordination of procurement, manufacturing, production, finance, marketing, and other essential tasks is its focus. Through internal integration, information technology plays a critical role in improving organizational responsiveness to strategic changes. As a result, there is increased flexibility, improved traceability and reliability, and clearer visibility [16].

Research indicates that internal communication between purchasing and other departments increases in frequency as well as content when companies view procurement as a strategic function. In companies where procurement managers actively improve business performance, cross-functional integration is especially noticeable. Thus, multifunctional coordination between procurement and other functions combined with integrated decision-making activities can be characterized as internal integration [6].

Internal integration is a strategy used by organizations to cut expenses by fostering cross-functional cooperation among key departments. As a result, procurement moves from operational purchasing to strategic, multifunctional sourcing, changing interdepartmental relationships from transactional to cooperative. A competent team with strong communication skills is needed as the process is constantly updated, integrated, and refined across business units [8].

Internal integration is essentially a systemic approach that unifies all organizational functions, facilitating better decision-making and real-time information exchange. Through integrated purchasing strategies, it promotes cost reduction and performance optimization while requiring close interdepartmental collaboration.

2. Supplier Development: Working cooperatively with suppliers to accomplish shared objectives through joint interventions that create new capabilities is known as supplier development. This makes it possible for suppliers to achieve goals that might not otherwise be possible. Because it necessitates proactive engagement, developing strategic suppliers is especially crucial for organizations [17]. Supplier development, according to the Institute for supply management (ISM), is a methodical endeavor to create and preserve a network of capable suppliers while improving their capacity to address organizational challenges. Time, money, resources, and—above all—a dedication to supplier relationships are all necessary for this process [17].

The practice of supplier development aims to strengthen relationships with key suppliers to minimize opportunistic behavior. It can be defined as any activity undertaken by the buyer to improve supplier performance and capabilities to meet future supply needs. This may include financial assistance, technological support, supplier development programs, and quality training for supplier personnel [6]. Supplier development has also been defined as a two-way effort to enhance supplier competencies in areas such as efficiency, quality, delivery capabilities, and costs. There are seven key measures to assess supplier development maturity: process-oriented consulting, knowledge transfer, strategic advice, market entry support, personnel exchange, financial support, and supplier investments [8].

In conclusion, supplier development is a cooperative process that aims to improve suppliers' performance and capabilities to satisfy organizational needs. It is especially important for strategic suppliers and calls for dedication and resources, including financial, technological, and training support.

3. Information Sharing: Information sharing serves as a critical foundation for building collaborative supply chain relationships [18] with effective partnerships and trust fundamentally dependent on robust information exchange and accurate data flow [17]. Supplier information sharing is a crucial technical mechanism for improving supply chain flexibility that significantly improves collaborative dynamics while producing significant time and cost savings. In the end, this approach improves performance by fostering deeper supply chain integration and stronger supplier-manufacturer partnerships. Two crucial aspects of information exchange are acknowledged by modern supply chains: willingness to share (the organizational openness to transparent information disclosure) and communication capability (the technological infrastructure enabling information transfer) [19].

Fundamentally, information sharing facilitates data retrieval, operational management, performance monitoring, and other crucial tasks by integrating information systems, decision-making procedures, and business processes. Buyer-supplier relationships are directly improved by this integration, which in turn improves overall business performance. Strategic information exchange has become especially important in the current unstable economic climate, turning conventional supply chains into cooperative networks that exchange vital operational data to fortify alliances and enhance integration

[20].

To sum up, information sharing improves information exchange between organizations and suppliers, which lowers costs and boosts efficiency in the supply chain. This approach is crucial for establishing reliable connections and enhancing business performance, especially in uncertain economic times.

4. Strategic Purchasing: Strategic purchasing is the process of planning, evaluating, implementing, and monitoring critical supply decisions within an organization. Its primary goal is to align all procurement activities with the company's capabilities to achieve long-term objectives. This approach enhances competitive advantage by ensuring purchasing decisions support overall strategic goals [21].

Strategic purchasing refers to procurement activities conducted before actual purchase orders, strategically designed to support broader business strategies. Strategic buyers make decisions that go beyond routine purchases, determining procurement direction regarding suppliers, commodity groups, and risk strategies. They analyze potential supply markets, negotiate framework agreements, manage supplier portfolios, and drive process improvements across value chains. The aim is to optimize purchasing processes in alignment with organizational objectives [22].

Given increasing business uncertainty due to globalization, outsourcing, and shorter product lifecycles, purchasing can play a key role as a boundary-spanning function with both internal and external business relationships. Strategic purchasing demonstrates a strategic orientation in procurement and long-term organizational planning, which should affect supply chain agility [6]. Three crucial variables are impacted by strategic purchasing: long-term cooperative relationships with suppliers, limited supplier numbers, and supplier communication [10].

In conclusion, the strategic role of procurement in long-term corporate planning is represented by strategic purchasing. It entails strategically connecting the business with outside partners, integrating procurement with internal operations like design and production, and choosing strategic suppliers to create long-lasting partnerships. Strategic purchasing enhances internal communication, fortifies ties with suppliers, and helps the business adapt to shifting consumer demands and market conditions.

1.4. Supply Chain Agility

A recent idea that helps businesses adjust to shifting market conditions is supply chain agility. The concept first surfaced in a report published in the 1990s by the Iacocca Institute, which emphasized the necessity of quickly adapting to changes in demand and integrating workforce skills with technology to achieve effective responsiveness [23]. The idea was further solidified in the late 1990s when [3] made a distinction between lean supply chains, which seek to boost productivity and cut waste, and agile supply chains, which emphasize quick response and flexibility. The idea has grown over time to incorporate new technologies like artificial intelligence and the Internet of Things, which improve organizations' capacity to anticipate changes in their surroundings and react appropriately quickly [24].

The necessity of agility in preserving operational sustainability and facilitating prompt recovery from disruptions has been highlighted by global crises like the COVID-19 pandemic [25, 26]. One framework that uses agility as a strategic component to improve organizational competitiveness through quick reaction to changes is the SCOR reference model (1996) [27]. At its core, agility refers to the ability of supply chains to handle unexpected market shifts while focusing on innovation to meet customer expectations [28] efficiently and flexibly.

Supply chain agility represents an organization's ability to quickly adapt to market changes, thereby enhancing overall organizational agility and competitive advantage [16, 29]. Moreover, success in dynamic markets requires flexible structures and integrating agile strategies to meet customer needs and capitalize on market opportunities [30].

In essence, supply chain agility is an organization's ability to swiftly adapt to unforeseen environmental changes through flexible demand response, innovation, and the deployment of modern technologies to optimize available resources and meet customer needs.

1.5. Supply Chain Agility Dimensions

Based on the work of Zhang and Sharifi [31] and Sharifi and Zhang [32] flexibility, speed, responsiveness, and efficiency have been adopted as key dimensions of supply chain agility. These dimensions are among the most widely used in previous studies reviewed by researchers, reinforcing their reliability and importance in assessing supply chain agility [33-37]. These dimensions had to be selected because they encapsulate the essential components of supply chain agility: efficiency embodies attaining optimal performance at the lowest possible cost, flexibility reflects the ability to adjust to changes, speed indicates how quickly demand can be met, and responsiveness represents the capacity to manage disruptions.

1. Supply Chain Flexibility: The ability of an organization to respond to changes in the environment by modifying internal structures and procedures while striking a balance between efficiency and adaptability is known as supply chain flexibility. Sherehiy, et al. [38] state that organizational structure flexibility, workforce flexibility, flexible production systems, and dynamic business strategies are all components of supply chain flexibility. Flexibility entails handling shifts in organizational problems, product models, and production volume [31]. Being flexible means being able to react quickly with little impact on time or expense [39].

The ability of a supply chain to reorganize its operations in response to notable changes in the market is what defines flexibility in the contemporary context [18]. Distinction between flexibility, which stresses internal operational efficiency and partner coordination, and agility, which concentrates on identifying environmental signals and reacting swiftly [31]. Supply flexibility, logistics flexibility, delivery flexibility, volume flexibility, and mix flexibility are important aspects of flexibility [34].

Supply chain flexibility is essentially an organization's ability to successfully adjust to changes in the environment by adjusting internal procedures and working with partners, guaranteeing effectiveness and responsive performance in dynamic business environments.

2. Supply Chain Speed: A supply chain's capacity to efficiently adjust to operational and market changes by reducing wait times and enhancing cycle times is known as supply chain speed, and it is especially important for sectors with short product life cycles [40]. It is described as carrying out procedures as quickly as possible, including operational process speed, product/service delivery speed, and product launch speed [31]. As a suitable reaction to market shifts results in improved customer service, reduced inventory costs, and shorter wait times, speed plays a crucial role in cutting lead times, improving inventory management, and boosting sales performance [18, 28] highlights that time is money, pointing out that lengthy lead times reduce responsiveness and raise expenses, necessitating prompt and efficient decision-making. Delivery speed, shorter product development timelines, efficient demand adaptation, better product allocation, and increased delivery reliability are some of the speed dimensions [34]. By guaranteeing accurate delivery times and facilitating rapid adaptation to market changes, supply chain speed also improves a company's competitiveness.

In conclusion, supply chain speed is the capacity to efficiently adjust to shifts in the market by cutting down on waiting times and improving operational cycles, which eventually improves process effectiveness and customer responsiveness.

3. Supply Chain Responsiveness: According to Patel and Sambasivan [35] supply chain responsiveness is the capacity to recognize environmental changes, react to them appropriately (either proactively or reactively), and effectively recover from them. Aspects of market dynamics, prompt customer demand adaptation, and adaptability to demand fluctuations are all included in this capability [37]. To provide tailored solutions that keep up with quick changes, responsiveness combines speed, flexibility, and efficient coordination with suppliers and customers [39].

Change recognition, reaction time, and operational visibility are the three main components of responsiveness [39, 41]. To better respond to real demand and market volatility, agile operations rely on tactics like operational flexibility, postponement, and improved supplier collaboration [18]. To guarantee efficient supply chain performance, the significance of information sharing, technology use, and disruption recovery capabilities is especially highlighted [34].

Supply chain responsiveness is essentially an organization's capacity to recognize changes in the environment, react appropriately, and effectively adjust to or recover from these changes. To meet changing needs, it combines quick response times, operational adaptability, and efficient supplier and customer coordination.

4. Supply Chain Efficiency: The ability to efficiently manage and coordinate tasks associated with obtaining and distributing supplies is referred to as supply chain efficiency. To guarantee the delivery of high-quality goods at reasonable prices, it entails integrating a number of functions, including production, marketing, R&D, and technology. This includes the ability to innovate, strategically manage supplier relationships, collaborate both internally and externally, and accomplish organizational goals through a variety of competencies like keeping clear visibility, using the right technologies, and successfully managing change. The capacity to adapt to shifting market conditions and produce excellent results in the allotted time is another factor that determines efficiency [18, 31, 33, 37, 42].

Fundamentally, supply chain efficiency is the capacity to plan and oversee supply-related tasks with a focus on quality, cost reduction, and innovation. This includes updating business practices and achieving alignment across all supply chain functions to meet organizational goals.

1.6. The Relationship between Strategic Sourcing and Supply Chain Agility

Supply chain agility is greatly impacted by strategic sourcing [9]. In a similar vein, Kim and Chai [19] study found that supply chain agility is positively impacted by both information sharing and strategic sourcing, with empirical data demonstrating that these effects are stronger in local sourcing contexts than in global sourcing ones. The study specifically emphasized how strategic sourcing, information sharing, and supplier innovations all work together to improve agility.

Strategic sourcing, organizational strategic flexibility, and improved company-specific supply chain agility were found to be clearly correlated by Chiang, et al. [6]. Information sharing, a crucial component of strategic sourcing, acts as a mediating factor in attaining superior agile supply chain performance, according to Alzoubi, et al. [43] research. Their conclusions highlight how crucial it is for businesses to invest in IT capabilities to facilitate quicker information flow throughout supply chains.

Beyond direct effects, supply chain agility and strategic sourcing have a transformative relationship that improves an organization's ability to adapt to changes in the market. Beyond improving supplier integration and information exchange, strategic sourcing builds more resilient and responsive supply chains through technological innovation and digital transformation.

1.7. Study Hypotheses

The subsequent study hypotheses can be developed based on the research problem and the results of earlier relevant studies that looked at the connection between supply chain agility and strategic sourcing can be formulated as follows:

H_1: There is a significant impact of strategic sourcing with its dimensions (internal integration, supplier development, information sharing, and strategic purchasing) on supply chain agility with its dimensions (supply chain flexibility, supply chain speed, supply chain responsiveness, and supply chain efficiency) in commercial companies.

H_2: There is a significant impact of strategic sourcing with its dimensions (internal integration, supplier development, information sharing, and strategic purchasing) on supply chain flexibility in commercial companies.

H_3: There is a significant impact of strategic sourcing with its dimensions (internal integration, supplier development, information sharing, and strategic purchasing) on supply chain speed in commercial companies.

H_4: There is a significant impact of strategic sourcing with its dimensions (internal integration, supplier development, information sharing, and strategic purchasing) on supply chain responsiveness in commercial companies.

H_5: There is a significant impact of strategic sourcing with its dimensions (internal integration, supplier development, information sharing, and strategic purchasing) on supply chain efficiency in commercial companies.

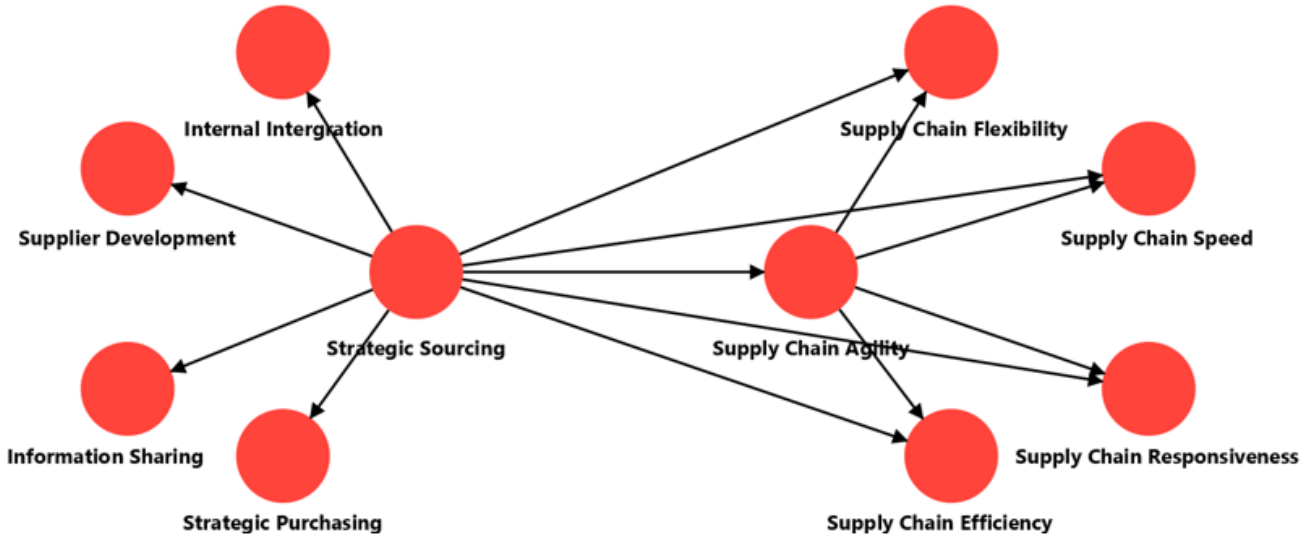

Figure 1.
Study Model.

2. Methodology

2.1. Population and Sample

The study relied on survey data collected from 166 managers (including top and middle management) and employees working in procurement and supply chain departments of commercial companies across Jordan, Saudi Arabia, Qatar, and the United Arab Emirates. The sample was selected using a convenience sampling approach.

2.2. Study Tool

The main research tool used in the study was a questionnaire that was thoughtfully created to match the variables being examined and the research goals. Three primary sections made up the survey instrument, which was created using Google Forms for electronic distribution.

Respondents' demographic and professional details, such as gender, age group, years of experience, and educational background, were recorded in the first section.

Internal integration, supplier development, information sharing, and strategic purchasing were the four main dimensions used to measure strategic sourcing in the second section. Items from well-known studies, such as Chiang, et al. [6]; Jum'a [7]; Kim and Chai [19] and Modi and Schoenherr [44] were used.

Using measurement items from earlier studies by Alshaar and Alkshali [37]; Nazempour, et al. [45]; Lotfi and Houshmand [46]; Aslam, et al. [47] and Abdoli Bidhandi and Valmohammadi [48] the third section examined supply chain agility across its four components: flexibility, speed, responsiveness, and efficiency. The electronic survey design ensured that the instrument was in line with current supply chain management research practices while facilitating effective data collection.

2.3. Data Analysis

The research model was examined using partial least squares structural equation modeling (PLS-SEM) techniques and SmartPLS 4 software for data analysis. This analytical method made it possible to evaluate the structural model (path relationships) and the measurement model (validity and reliability) at the same time. To confirm construct reliability and convergent validity for the measurement model evaluation, the analysis looked at outer loadings, Cronbach's alpha coefficients, composite reliability scores, and average variance extracted (AVE) values. The Fornell-Larcker criterion was used to test discriminant validity. In order to test the proposed connections between supply chain agility components and strategic sourcing dimensions, the structural model analysis concentrated on assessing path coefficients and their statistical significance using t-values and p-values. This comprehensive analytical approach allowed for rigorous examination of both the psychometric properties of the measurement instruments and the strength of relationships between latent constructions in the proposed theoretical framework.

2.4. Measurement

To measure strategic sourcing and supply chain agility, a five-point Likert scale was used. The Likert scale consists of rating options ranging from 1 to 5 (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree).

2.5. Relative Importance

It is determined when displaying the arithmetic mean results according to an approved formula, and according to the five-point scale of response options for each item, as shown in Table 1.

Table 1.
Scale Relative Importance Level.

Scale	Relative Importance Level
1 - Less than 2.34	Low
2.34 - Less than 3.67	Medium
3.67 - 5	High

3. Results

The primary objective of the study was to investigate the impact of strategic sourcing on supply chain agility at commercial companies.

Table 2 shows that 76.5% of survey participants were male and 23.5% were female. 41% were between 40 and 50 years old, and 6.6% were less than 30 years old. The distribution of educational qualifications shows that most participants held a bachelor's degree at 62.7%, followed by those with a master's degree 30.1%. Regarding years of experience, 4.8% of participants had less than 5 years of experience, and 30.7% had 20 years or more of experience.

Table 2.
Demographic and functional.

Variable		N	%
Gender	Male	127	76.5
	Female	39	23.5
Age	Less than 30 years	11	6.6
	30-Less than 40 years	54	32.5
	40-Less than 50 years	68	41.0
	50 years and older	33	19.9
Education	Bachelor	104	62.7
	Master	50	30.1
	PhD	12	7.2
Experience	Less than 5 years	8	4.8
	5-Less than 10 years	27	16.3
	10-Less than 15 years	32	19.3
	15-Less than 20 years	48	28.9
	20 years and older	51	30.7

3.1. Evaluation Results and Testing Measurement Model

Table 3 shows the assessment of the reliability and convergent validity between the dimensions of each variable and its indicators (items).

Table 3.
Assessment results of reliability and convergent validity between dimensions and items of each variable.

Variable	Dimension	Item	Outer loading	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Supply Chain Agility	Supply Chain Flexibility	1	0.801	0.762	0.849	0.584
		2	0.830			
		3	0.767			
		4	0.757			
	Supply Chain Speed	5	0.862	0.806	0.874	0.634
		6	0.802			
		7	0.827			
		8	0.769			
	Supply Chain Responsiveness	9	0.835	0.823	0.883	0.653
		10	0.835			
		11	0.842			
		12	0.796			
	Supply Chain Efficiency	13	0.725	0.797	0.869	0.626
		14	0.813			
		15	0.866			

		16	0.852			
Strategic Sourcing	Internal Integration	17	0.820	0.839	0.843	0.676
		18	0.800			
		19	0.833			
		20	0.877			
	Supplier Development	21	0.820	0.881	0.886	0.737
		22	0.895			
		23	0.900			
		24	0.824			
	Information Sharing	25	0.802	0.826	0.885	0.657
		26	0.838			
		27	0.851			
		28	0.801			
	Strategic Purchasing	29	0.720	0.782	0.860	0.607
		30	0.852			
		31	0.832			
		32	0.769			

According to Hair, et al. [49] it is clear from Table 3 that all outer loading values for each item of the study tool were greater than 0.7, which indicates that the reliability was achieved for indicators, and that Cronbach's alpha values were greater than 0.7 and less than 0.95, which means that reliability was achieved for variables. To confirm the overall reliability, the results showed that the composite reliability values were greater than 0.6, which confirms the achievement of overall reliability for each dimension. The results also showed the achievement of convergent validity between items and their dimensions, as the values of the average extracted variance were greater than 0.5.

Table 4.
Results of discriminant validity using Fornell-Larcker analysis between dimensions of study variables.

	Supply Chain Responsiveness	**Internal Integration**	**Strategic Purchasing**	**Supplier Development**	**Supply Chain Speed**	**Supply Chain Efficiency**	**Supply Chain Flexibility**	**Information Sharing**
Supply Chain Responsiveness	**0.808**							
Internal Integration	0.521	**0.822**						
Strategic Purchasing	0.502	0.597	**0.779**					
Supplier Development	0.432	0.703	0.527	**0.859**				
Supply Chain Speed	0.691	0.609	0.490	0.488	**0.796**			
Supply Chain Efficiency	0.691	0.635	0.574	0.462	0.721	**0.791**		
Supply Chain Flexibility	0.664	0.58	0.536	0.447	0.731	0.719	**0.764**	
Information Sharing	0.514	0.706	0.702	0.654	0.592	0.634	0.555	**0.811**

Table 4 shows the results of discriminant validity using the Fornell-Larcker analysis between the dimensions of the study variables. This analysis compares the square root of the AVE values with the correlations of other variables. The square root of each variable (AVE) must be higher than its largest correlation with any other variable [49]. As shown in the table, all discriminant validity coefficients are statistically acceptable; this indicates that the study model has met the Fornell Larcker criterion. Therefore, the study model achieved convergent validity and discriminant validity.

Table 5.
Dimensions and variables study results.

Variables and *Dimensions*	**Mean**	**Standard deviation**	**Rank**	**Level**
Internal Integration	3.83	0.65	3	High
Supplier Development	3.51	0.79	4	Medium
Information Sharing	3.84	0.63	2	High
Strategic Purchasing	3.87	0.63	1	High
Strategic Sourcing	3.76	-	-	High
Supply Chain Flexibility	3.93	0.56	1	High
Supply Chain Speed	3.87	0.62	3	High
Supply Chain Responsiveness	3.86	0.59	4	High
Supply Chain Efficiency	3.93	0.59	2	High
Supply Chain Agility	3.90	-	-	High

From Table 5 the level of importance for both supply chain agility and strategic sourcing was high, reaching 3.90 and 3.76 respectively, which is higher than 3.67. Also, the level of importance for each dimension of the independent variable and the dependent variable was high, except for the supplier development dimension, which is the only dimension with medium importance, which reached 3.51.

3.2. Hypothesis Testing Results

Table 6.
Hypothesis testing results.

Hypothesis	Path	Path coefficient (β)	R^2	t-Value	p-value	Sig p≤0.05
H1	Strategic Sourcing → Supply Chain Agility	0.708	0.505	16.522	0.000	Significant
H2	Strategic Sourcing → Supply Chain Flexibility	0.619	0.771	11.456	0.000	Significant
H3	Strategic Sourcing → Supply Chain Speed	0.641	0.798	12.421	0.000	Significant
H4	Strategic Sourcing → Supply Chain Responsiveness	0.579	0.752	10.381	0.000	Significant
H5	Strategic Sourcing → Supply Chain Efficiency	0.675	0.795	15.727	0.000	Significant

Table 6 and Figure 2 show the following results:

1. There is a significant impact of strategic sourcing with its dimensions (internal integration, supplier development, information sharing, and strategic purchasing) on supply chain agility with its dimensions (supply chain flexibility, supply chain speed, supply chain responsiveness, and supply chain efficiency) at commercial companies, as the path coefficient reached 0.708 and the significance *p*-value reached 0.000, which is less than 0.05. The results also showed that the *t*-value reached 16.522, which is greater than the reference standard value 1.96 as determined by Hair et al. (2017, 206) and corresponding to a significance level of 0.05. The results also showed that the value of Beta reached 0.708, which indicates that strategic sourcing contributes 70.8% of supply chains agility at commercial companies. The results also show that the value of R^2 reached 0.505 for the supply chains agility; that is, strategic sourcing explained 50.5% of supply chains agility variance, while 49.5% of the variance is attributed to other variables.
2. There is a significant impact of strategic sourcing with its dimensions (internal integration, supplier development, information sharing, and strategic purchasing) on the supply chains flexibility at commercial companies. The value of Beta reached 0.619, indicating a positive impact of strategic sourcing with its dimensions on the supply chains flexibility at commercial companies. The results also indicated that the value of t-value reached 11.456, which is greater than the reference standard value 1.96, and that the degree of significance (*p*-value) reached 0.000, which is significant, since it is less than the significance level of 0.05. Based on the above, the hypothesis that indicates the existence of a significant impact of strategic sourcing on supply chains flexibility at commercial companies is accepted.
3. There is a significant level impact of strategic sourcing with its dimensions (internal integration, supplier development, information sharing, and strategic purchasing) on the supply chains speed at commercial companies, as the value of Beta reached 0.641, which indicates a positive impact of strategic sourcing with its dimensions on the supply chains speed at commercial companies. The results also indicated that the value of *t*-value reached 12.421, which is greater than the reference standard value (1.96), and that the level of significance *p*-value reached 0.000, which is significant because it is less than 0.05; therefore, the hypothesis which indicates that there is a significant impact of strategic sourcing on the supply chains speed at commercial companies is accepted.
4. There is a significant impact of strategic sourcing with its dimensions (internal integration, supplier development, information sharing, and strategic purchasing) on the supply chains responsiveness at commercial companies, as the value of Beta reached 0.579, indicating the presence of an impact of strategic sourcing with its dimensions on the supply chains responsiveness at commercial companies. The results also indicated that the *T*-value reached 10.381, which is greater than the reference standard value 1.96, and that the significance of the *p*-value reached 0.000, which is significant because it is less than 0.05. Considering the above results, the hypothesis which indicates that there is a significant impact of strategic sourcing on the supply chains responsiveness at commercial companies is accepted.
5. There is a significant impact of strategic sourcing with its dimensions (internal integration, supplier development, information sharing, and strategic purchasing) on the supply chains efficiency at commercial companies, as Beta reached 0.675, meaning that there is an impact of strategic sourcing with its dimensions on the supply chains efficiency at commercial companies, and the value of *t*-value reached 15.727, which is greater than the reference standard value 1.96, and the significance of *p*-value reached 0.000, which is significant because it is less than the

significance level specified in this study 0.05; therefore, the hypothesis which indicates that there is a significant impact of strategic sourcing on the supply chains efficiency at commercial companies is accepted.

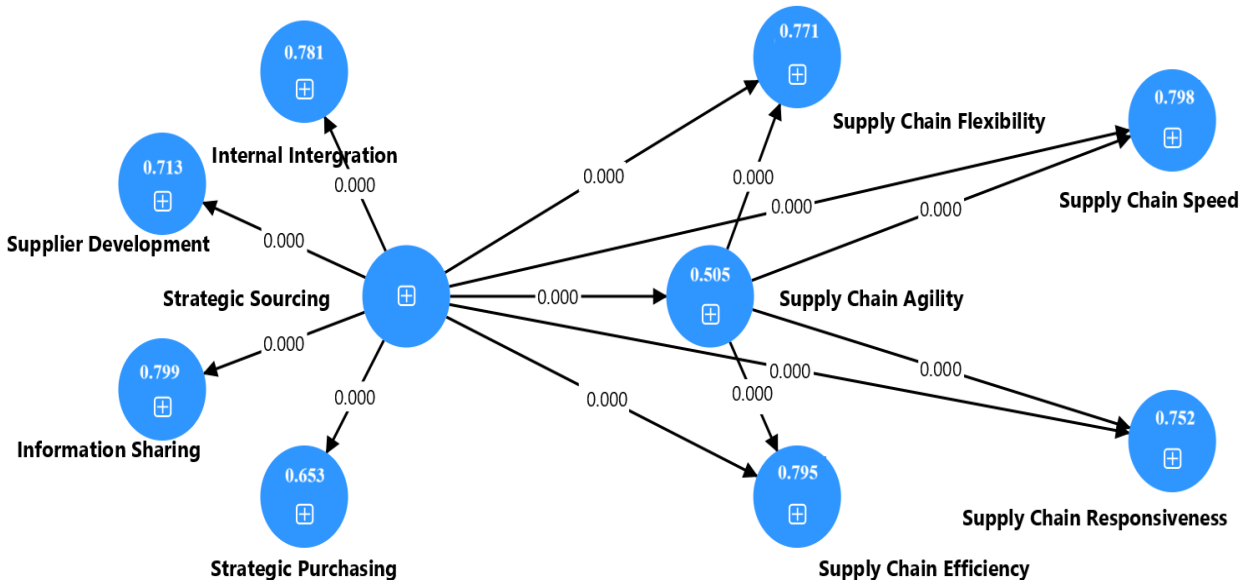

Figure 2.
Structural Model Assessment (*P*-values).

4. Discussion

This study provides new insights into the relationship between strategic sourcing and supply chain agility. It examines the impact of strategic sourcing, including its dimensions (internal integration, supplier development, information sharing, and strategic purchasing), on supply chain agility, including its dimensions (supply chain flexibility, supply chain speed, supply chain responsiveness, and supply chain efficiency) at commercial companies. By illustrating the importance of the dynamic relationship between the variables they examined, the results of this study help to validate the conclusions of earlier research. This study's attempt to provide a theoretical framework for the connection between supply chain agility and strategic sourcing is one of its contributions, particularly considering the paucity of prior research or theoretical suggestions in this area. Therefore, the researchers hope that the theoretical proposals, and their testing through the current study model, will guide future research and direct the attention of various organizations to these variables and the relationship between them.

4.1. Descriptive Results Discussion

The results indicated that the surveyed companies excelled in identifying and allocating their strategic resources. This excellence is likely due to their superiority in several key dimensions: strategic purchasing, information sharing, and internal integration, as follows:

- The results showed that commercial companies achieved high levels of internal integration between their various departments. This may be attributed to their commitment to enhancing continuous communication between the purchasing department and other departments, in addition to achieving harmony and coordination in the implementation of internal tasks. The involvement of purchasing employees in synchronized engineering teams may also be a contributing factor in raising the level of this integration.
- The high level of information sharing indicates the existence of an organizational environment that encourages the sharing of information with partners within supply chains. This improvement may be the result of integrated information systems availability that contribute to improving regular communication and meeting business needs, which supports rapid decision-making and response to environmental changes.
- The results showed that the purchasing function holds a strategic position in the companies surveyed. This is likely due to senior management's belief in the vital role of this function in achieving these companies' objectives. This perception is reinforced by the procurement department's involvement in strategic planning processes, its focus on following up with customer complaints, developing sustainable relationships with suppliers, and responding to changes in the business environment.
- However, the results indicated that the supplier development dimension did not achieve the expected level, ranking average compared to the other dimensions. This may be due to the limited investments companies make to support suppliers financially and technically, as well as the scarcity of joint training programs aimed to raising quality levels, which has impacted the efficiency of their supplier performance evaluation systems.
- Furthermore, the study demonstrated that the surveyed companies were distinguished by their highly agile supply chains across the following four dimensions:

- The results indicated that companies were able to expand their operations and adjust supply chain policies in response to customer needs and changes in the environment, including the possibility of adjusting operational capacity in the short term.
- The companies were distinguished by their speed in implementing supply chain stages. This superiority is likely due to the flexibility of operational procedures and their ability to adapt to changes in the environment compared to competitors. The results demonstrated companies' ability to effectively respond to customer needs and quickly interact with supplier strategies, enhancing their market competitiveness.

The findings showed businesses' strong operational capabilities, which enabled them to make the best use of their resources. These capabilities were bolstered by innovative technology and networks of relationships based on mutual trust with supply chain partners.

- The findings showed that supply chain agility can be greatly enhanced by investing in strategic sourcing, especially internal integration and strategic purchasing. To guarantee sustainable performance and raise the caliber of the supply chain, more work must be done to develop suppliers.

4.2. Hypotheses Results Discussion

-The findings showed that strategic sourcing has a major impact on supporting supply chain agility with its different dimensions (flexibility, speed, responsiveness, and efficiency) at commercial companies across all of its dimensions (internal integration, supplier development, information sharing, and strategic purchasing). This outcome confirms the results of the reviewed studies, which showed that supply chain agility is significantly impacted by strategic sourcing [19, 6, 9]. The following integrated effects were used to illustrate this relationship:

- The findings show that improving supply chain agility requires strategic sourcing in all of its forms. Businesses seem to be able to create supply chains that are more aware of environmental changes and better equipped to make quick decisions and carry out necessary adjustments by proactively managing supplier relationships, maintaining internal consistency, efficiently utilizing information flow, and making well-informed strategic purchasing decisions. This adaptability is probably going to be crucial in helping businesses take advantage of new opportunities and successfully navigate uncertainties.

-The findings showed that strategic sourcing has a major positive impact on supply chain speed. Companies seem to have been able to shorten delivery times, enhance response times, and simplify operational procedures thanks to seamless internal alignment, supplier development, and the implementation of strategic purchasing practices. In today's fast-paced and constantly evolving business environments, this enhanced speed gives businesses a competitive edge.

-The findings demonstrated that strategic sourcing helps supply chains adjust to shifting market demands and environmental changes. Businesses seem to be able to effectively respond to challenges, whether they are related to supply and demand or emerging market conditions, by increasing information transparency, building a cooperative and adaptable supplier network, and making strategic decisions regarding supplier management. This improves their capacity to minimize disruptions and stay up to date.

-The findings showed that increasing supply chain efficiency is largely dependent on strategic sourcing. Improved cost management, waste reduction, and resource utilization have all been facilitated by creating an efficient collaborative environment, cultivating suppliers, and making strategic purchasing decisions. These enhancements improve the overall operational performance of the companies under study and facilitate the seamless flow of goods through supply chains.

5. Recommendations

The study recommends the following because of its findings:

1. Strengthen supplier development initiatives by forming enduring alliances that enable suitable reactions and attain operational effectiveness.
2. Implement intelligent information-sharing platforms that enhance supply chain stakeholder integration.
3. To guarantee fluidity and integration, examine internal procedures and make strategic connections between them.
4. To guarantee supply continuity and lower risks, encourage a culture of strategic purchasing based on sustainability and trust rather than short-term contracts.

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