

manage the risks associated with uncertainty and vulnerability in complex, global supply chains (Stephens, 2016).

Firms must be agile for the reason that being responsive is a crucial competency for them in present global economy. Organizations that are agile happen to be more successful (Bagheria, et al., 2014).

2- Research Background:

Supply chains not only consist of suppliers and buyers of goods, but all the firms that integrate their skills and knowledge in “all the upstream and downstream flows of products, services, finances, and information from the ultimate supplier to the ultimate customer” to co-create compelling service offerings for and with end-users (Aronsson, 2011).

A Firm's Supply Chain Agility is a critical capability for survival in today's dynamic business environments (Chiang et al., 2012). Supply chain agility is a strategic ability that assists organizations rapidly to sense and respond to internal and external uncertainties via effective integration of supply chain relationships. Organizational agility is composed of the following dimensions: quickness, proactiveness, responsiveness, adaptiveness, cooperation, flexibility and information system/technology (Fayezi et al., 2016).

Supply chain agility is defined by Ismail and Sharifi (2006) as the capability of a supply chain as a whole and its members to rapidly realign the network and its operations to meet the highly dynamic customer requirements and turbulent requirements of the demand network. The main focus is in running businesses in network structures with an adequate level of agility to respond to changes as well as proactively anticipate changes and seek new emerging opportunities.

Chan et. al. (2016) defined Supply chain agility as a firm's internal and external capability—in conjunction with its key suppliers and customers—to respond in a timely manner to market changes as well as to potential and actual disruptions. Supply chain agility represents an outcome or externally focused concept. They also highlighted that supply chain agility can be achieved through the synergies of different forms of flexibility from all parties in the supply chain, thus empowering each member firm to respond more effectively to a highly volatile marketplace. The literature argues that supply chain agility can influence an organization's success and prosperity (Fayezi et al., 2016).

According to Mehralian et al., (2015) agility might be defined as the ability of a firm to reply rapidly to changes in the market and customers' demands. To be really agile, a firm should control a number of differentiating agility providers.

Among the large number of classifications of supply chain agility, two underlying dimensions are commonly expressed: Firstly, agility denotes the ability of a supply chain to respond swiftly to unexpected or unplanned external circumstances. Responsiveness entails the need to perceive demand without distortions or latencies. The visibility of information is therefore a fundamental characteristic of supply chain responsiveness as it increases demand sensitivity.

A second characteristic of supply chain agility lies in the capability of a supply chain to demonstrate significant flexibility (Giannakis and Louis, 2016); that is the planned ability of collaborating organizations to adapt to expected demand uncertainty and deal with variation, by restructuring their operations, reconfiguring their capabilities, or realigning their strategic objectives (Swafford et al., 2006).

Key within the concepts of both agility and resilience in supply chain management is flexibility (Stephens, 2016). the study of Swafford et al. (2006) considered flexibility-agility to have a competence-capability relationship , where competence is about “what an organization can do particularly well”, and capability is defined as “appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment”.

Flexibility is defined as a competence built by an organization to be able to change or react with little penalty in time, cost, or performance (Swafford et al., 2006) whereas a “firm’s supply chain agility” (FSCA) is defined as: the capability of the firm, internally, and in conjunction with its key suppliers and customers, to adapt or respond in a speedy manner to a changing marketplace, contributing to agility of the extended supply chain (Braunscheidel and Suresh, 2009).

In addition to the flexibility-agility linkage, a second emerging stream of research has been on how different sourcing strategies may contribute to the agility of a firm. Enhanced strategic buyer-supplier relationship and better information sharing result in augmented firm's agility. (Paulraj and Chen, 2007, Ledyard and Keough, 2007, cited in Chiang, 2012). Swafford et al. (2006) found that sourcing flexibility has a positive and direct impact on agility.

According to Chiang et al., (2012) study, strategic sourcing and the firm’s strategic flexibility (FSF) are explored as two major antecedent competences for the enhancement of the Firm's Supply Chain Agility (FSCA), which is viewed as a dynamic capability. In addition, FSF is also

investigated as a possible mediator that may influence the relationship between strategic sourcing and Firm's Supply Chain Agility

Tse et al., (2016) propose that external learning is an important antecedent of Supply Chain agility based on the assumption that a company with a higher degree of organizational learning is more likely to be characterized as agile. Increased learning from the market, customers and suppliers helps the company to improve its responsiveness to uncertainty. In external learning, a firm can embrace new knowledge from other organizations and integrate it within its own intelligence. The study also propose that Supply Chain integration is another under researched antecedent of Supply Chain agility. It has already been suggested that a higher degree of Supply Chain integration could lead to better firm performance

The study of Qrunfleh & Tarafdar (2013) finds that strategic supplier partnership fully mediates the relationship between a lean supply chain strategy and supply chain responsiveness, It is also shown that supply chain responsiveness is associated with enhanced firm performance.

Um (2017), argued that a trade-off exists between product variety and supply chain (SC) performance. Therefore, To help mitigate the impact on SC of increased product variety, he conducted a study to examine how variety-management activities including variety management strategy, supplier partnerships and close customer relationships affect Supply Chain flexibility and agility at different levels of customization. The results suggest that internal variety-management strategy and external SC integration have a positive influence on SC flexibility and agility. Customer relationships and variety management strategies influence SC flexibility more than partnerships with suppliers whereas variety

management strategies and partnerships with suppliers influence SC agility more than customer relationships.

In a high-customization context, close customer relationships are the most effective way to increase SC flexibility, whereas partnerships with suppliers are the most effective way to increase SC agility. In a low-customization context, a variety management strategy and customer relationships are the most effective way to increase both SC flexibility and agility.

Sangari and Razmi (2015) highlighted the role of business intelligence (BI) in achieving agility in supply chain context by examining the relationship between BI competence, agile capabilities, and agile performance of the supply chain. The empirical results support the conceptualization of supply chain BI competence as a multi-dimensional construct comprising managerial, technical, and cultural competence, and confirm that it is a key enabler of supply chain agility in terms of both agile capabilities and agile performance. The results also provide support for partial mediation of agile capabilities on the relationship between BI competence and agile performance of the supply chain.

Pandey and Garge (2009) identified 12 key supply chain variables, on which the practitioner should focus, to make supply chains of manufacturing enterprises more agile Collaborative planning forecasting and replenishment, Process integration Use of IT tools, Logistics planning and management, understanding market volatility are among strategic variables having high driving power and effective use of these can help in achieving the corporate goals.

3- Research Problem:

The problem of this research is *"The inability of supply chains to rapidly adjust responsively to an increased frequency of supply chain disruptions, change, and uncertainties in a dynamic business environment of the manufacturing and service industries"*.

Reinforcing supply chain agility is one way to overcome disruption and proactively face change, and uncertainties. Determinants of supply chain configurations could be key drivers to supply chain agility that would lead to better supply chain performance.

4- Research Questions:

The main Inquiry of this research is to identify what are the antecedents of supply chain agility in the pharmaceutical industry?

- 1- Is there a significant relationship between firm's strategic sourcing capabilities and supply chain agility in the pharmaceutical industry?
- 2- Is there a significant relationship between supply chain integration and supply chain agility in the pharmaceutical industry?
- 3- Is there a significant relationship between firm's strategic flexibility and the supply chain agility in the pharmaceutical industry?
- 4- Is there a significant relationship between firm's Lean practices and supply chain agility in the pharmaceutical industry?

5- Research Objectives:

The main objective of this research is to determine the antecedent competencies that reinforce the responsiveness of the pharmaceutical supply chain.

- 1- To identify the significance of the relationship between firm's strategic sourcing capability and supply chain agility in the pharmaceutical industry.
- 2- To identify the significance of the relationship between supply chain integration and supply chain agility in the pharmaceutical industry.
- 3- To identify the significance of the relationship between firm's strategic flexibility and the supply chain agility in the pharmaceutical industry.
- 4- Is there a significant relationship between firm's Lean practices and supply chain agility in the pharmaceutical industry?

6- Research Hypotheses:

- 1- There is a significant relationship between firm's strategic sourcing capability and supply chain agility in the pharmaceutical industry?
- 2- There is a significant relationship between supply chain integration and supply chain agility in the pharmaceutical industry?
- 3- There is a significant relationship between firm's strategic flexibility and the supply chain agility in the pharmaceutical industry?
- 4- There is a significant relationship between firm's Lean practices and supply chain agility in the pharmaceutical industry.

7- Research Variables:

Supply Chain Agility (SCA) (Chiang et al. 2012):

The capability of the firm, internally, and in conjunction with its key suppliers and customers, to adapt or respond in a speedy manner to a changing marketplace, contributing to agility of the extended supply chain

The Antecedents of supply chain agility (Chiang et al. 2012, Tse et al. 2016):

The antecedents of supply chain agility are the competences preceding to being agile, where competence is about “what an organization can do particularly well”. Competences are built by an organization to be able to change or react with little penalty in time, cost, or performance

The antecedents / competencies of agility include the following elements:

1- Strategic sourcing (SC):

is defined as “the process of designing and managing supply networks in line with operational and organizational performance objectives”

- Strategic purchasing: Purchasing can play a major role as a boundary spanning function that has ties both within the firm and with several business partners. In this research, Strategic purchasing construct is a demonstration of the strategic role of purchasing in the firm’s long-term planning as well as the capability of the sourcing team to carry out procurement strategies efficiently.
- Internal integration: is the presence of cross-functional communication between purchasing and other functions, and integrated decision-making activities.

2- Supply Chain integration (SCI):

"to elevate the linkages within each component of the chain, to facilitate better decision and to get all pieces of the chain to interact in a more efficient way" (Putzger, 1998).

In an integrated supply chain, there are three essential elements, namely, management information systems (focus on the flow of finance and information management) both internally and with supply chain partners, internal integration (focus on coordination of processes with other departments) and external integration (focus on synchronizing the processes with chain members).

3- Strategic flexibility (SF):

The strategic perspective is considering the competence-capability framework and an integrative approach to flexibility. Strategic flexibilities are inter-firm or intra-firm flexibilities which constitute important factors to enhance a firm's flexibility competence. The linkages with strategic sourcing, and hence supply flexibility are to be considered within strategic flexibility.

- Sourcing flexibility: Swafford et al. (2006) defined sourcing flexibility as the availability of a range of options and the ability to effectively exploit them so as to respond to changing requirements related to the supply of purchased components. According to (Chiang, 2012), sourcing flexibility is the buyer's (focal company) evaluation of major suppliers' ability to satisfy the buyer's dynamically changing specifications in terms of quality, time, and product mix.
- product design-related flexibility as the competence of the system to develop new products, make minor design change, and adjust the

product mix to satisfy the dynamic market demand in timely and cost-effective manner

- process-related flexibility as an internal competence to adjust the production processes and volumes based on the changing needs of the marketplace.
- Human Flexibility: The ability of the workforce to effectively perform variety of tasks. This element of strategic flexibility is reflecting the knowledge, skills, and talents of the organization's personnel.

Lean Practices (LP):

Lean practices can be defined as the continuous relentless efforts to eliminate waste of time and activities in the system (Braunscheidel, 2005).

8- Research Design and Methodology:

The ontological stance of this research follows the positivist approach which is that there is an overall single reality and it is external to the researcher; therefore, the researcher should be objective in collecting and analyzing data related to this variable. Therefore, Descriptive quantitative research study was conducted to collect valid and reliable data.

The epistemological stance of the positivism quantitative approach is based on testing reality. Testing reality without any direct contact between the researcher and the knowledge aims to ensure objectivity in investigating this reality. The focus of this way of gaining knowledge is to examine how reliable are the finding to apply on similar cases, in other words, generalizing the research findings for the whole sector or organizational structures.

A: Research Population and sampling unit:

As the main aim of the research study is to investigate the antecedents and consequences of supply chain agility comparatively between the manufacturing and the service sector, this research study is conducted in the private and multinational pharmaceutical corporations working in Egypt as a manufacturing-based supply chain setting.

Total number of pharmaceutical firms working in Egypt is 150 firms. This sector is classified into public, private, and multinational corporations. While the majority of this sector in Egypt is private companies and multinational corporations, there are only 8 companies belong to the public sector which represents only 5% of the total number of pharmaceutical corporations manufacturing in Egypt. In 2019, The sales number of these public pharmaceutical companies combined are only less than half of the sales of "Novartis" in the Egyptian market which is one of the multinational pharmaceutical corporations in Egypt.

The researcher approaches supply chain manager, operations managers and general manager in private and multinational pharmaceutical corporations.

B: Sample size:

Sample data is collected from supply chain and operation managers in 111 private and multinational pharmaceutical corporations. The researcher used Steven K. Thompson equation to calculate the sample size, from the next formula (Thompson, 2012):

$$n = \frac{N \times p (1 - p)}{[\{N - 1 \times (d^2 + z^2)\} + p (1 - p)]}$$

Where:

n: Sample Size

N: Population size

Z: Confidence level at 95%

d: Error proportion (0.05)

p: Probability (50%)

According to this formula, the sample size and response rate was calculated for the pharmaceutical industry as follow:

Sector	Population Size	Confidence Level	Sample Size	Number of invitations	Response rate	Actual Responses	Excluded Responses	Ready for analysis
Pharmaceutical industry	399	95%	196	340	60%	204	7	197

The sampling method used is a simple random sampling which is a probability sampling procedure that allow every sampling unit in the population to have an equal opportunity for being selected to be included in the sample.

C: Measurement tool: Questionnaire

The consequential steps of building up the final measurement tool consisted of the following:

- 1- Reviewing literature related to supply chain agility and concluding the crucial aspects of supply chain agility and supply chain performance as well as the main elements that represent the antecedent predecessors to a responsive agile supply chain. Initially, 6 variables were determined as the main antecedents

associated with supply chain agility, namely: Strategic sourcing, supply chain integration, strategic flexibility, lean practices, external learning, and supply chain adaptability

- 2- Navigating through the practices of the pharmaceutical industries to explore these elements and gain a level of understanding on how these practices are structured and interacts on ground. As a result: two variables were excluded: external learning and supply chain adaptability, major modifications were designed into the strategic sourcing, and Information sharing were included in the supply chain integration construct.
- 3- Combining the results of both of the two previous steps together, the researcher was able to design the final constructs that composed the measurement scales of each research variable. Five - point Likert scale was utilized as a response mechanism to allow for quantifying and analyzing the contents of a fulfilled returned questionnaires.

D: Data Collection: Survey method

The English as well as the Arabic version of the questionnaire were distributed to the participants in many different ways. Either the researcher delivered the questionnaire to the participants' job locations, or a hyper-link of the questionnaire submitted by google forms was sent to other possible participants. Following up and friendly reminders was consistently sent to encourage participants to fill the questionnaire so the researcher could collect a reasonable number of valid responses given the sample size.

9- Research Data analysis:

The purpose of this research is to investigate the extent to which these variables are contributing to SCA in the research industry context. This section consists of:

- 1- Reliability tests
- 2- Validity tests
- 3- Correlation test
- 4- Regression test

A: Reliability Test:

Conceptually, reliability is defined as "the degree to which measures are free from error and therefore yield consistent results" (Peterson,1994). therefore, to assure that the instrument is holding high degree of internal consistency, a reliability test was conducted. Minimally accepted reliability coefficient was previously recommended to be in the range of .5 to .6. whereas in 1978, the recommended level was raised to 0.7. (Peterson,1994).

Table (1) *Reliability of "Strategic Sourcing Capability" Construct:*

Strategic Sourcing Capability		Corrected Item-Total Correlation	Cronbach's Alpha
Strategic Purchasing	Involvement in Strategic Planning	.692	.835
	Developing Suppliers Base	.623	
	Executing Procurement Strategies	.493	
Integration	Communication with departments	.689	
	Inclusion in design teams	.544	
	Cross functional training	.617	

Source: Statistical Results

Table (2) Reliability of "Supply Chain Integration" Construct:

Supply Chain Integration		PH	
Items		Corrected Item-Total Correlation	Cronbach's Alpha
Internal Information Technology	Central Information System	.742	.957
	IT Architecture	.816	
	IT expert Team	.696	
Internal Integration	Frequent Communication	.677	
	Collaborative Improvement Teams	.741	
	Cross departmental Training	.756	
	Collaborative Problem Solving	.768	
	Inter-department coordination	.531	
External Information Exchange	Information sourcing	.758	
	Linkage with suppliers	.624	
	Linkage with Customers	.582	
Inter-firm Integration	Coordination with Partners	.330	
	Collaborative demand Forecasting	.693	
	Integrating interfirm Processes	.777	
	Employing rapid response initiatives	.572	
Integration with Suppliers	Sharing Inventory levels	.685	
	Feedback on suppliers' performance	.726	
	Suppliers relationships	.828	
	Scheduling Synchronization	.632	
	JIT delivery	.611	
Integration with customers	Customers deliver feedback	.794	
	Considering customer feedback	.760	
	Coordination with customers	.631	

Source: Statistical Results

Table (3) Reliability of "Strategic Flexibility" Construct

Strategic Flexibility	Items	PH	
		Corrected Item-Total Correlation	Cronbach's Alpha
Supply Flexibility	Conformance to specifications	.793	.924
	Accept urgent orders and late changes	.632	
	Supply advanced products	.747	
	Overstocking	.518	
Product design related flexibility	Newly designed products	.270	
	Minor design changes	.599	
	Product mix changes	.730	
Process Related Flexibility	Service planning buffer	.588	
	Process capacity change	.585	
	Switching between products	.632	
	Variety of products	.688	
	Efficient operations	.728	
Human Capital Flexibility	Operating various machines	.673	
	Job rotation	.623	
	Talented staff	.739	

Source: Statistical Results

Table (4) Reliability of "Lean Practices" Construct:

Lean Practices	Corrected Item-Total Correlation	Cronbach's Alpha
Rate of mistakes	.748	.849
Over processing	.568	
Waiting Time	.644	
Labor relations	.627	
Turnaround time	.519	
Product Flow	.699	

Table (5) Reliability of "Supply Chain Agility" Construct:

Supply chain Agility	PH	
	Corrected Item-Total Correlation	Cronbach's Alpha
Detecting external changes	.659	.900
Realigning Strategies	.679	
Responsiveness to demand fluctuations	.665	
Customer Responsiveness	.655	
Product adaptation	.619	
Reacting to supply side changes	.668	
Reconfiguring supply chain resources	.722	
Reaction to industry developments	.651	
Product portfolio adjustments	.702	

Source: Statistical Results

Table (6) Cronbach's Alpha for each construct of the questionnaire

Constructs	N of Items	PH
		Cronbach's Alpha
Strategic Sourcing Capability	6	.835
Supply Chain Integration	23	.957
Strategic Flexibility	15	.924
Lean Practices	6	.849
Supply Chain Agility	9	.900
Supply Chain Performance	6	.867

Source: Statistical Results

The rule of thumb regarding item-total correlation is to be higher than 0.3. Therefore, all items in the previous tables are considered reliable to measure the determinants of the variables' constructs. According to the previous tables, Cronbach' Alpha of all constructs of the measurement tool are higher than 0.7.

B: Test of Validity: Confirmatory Factor analysis:

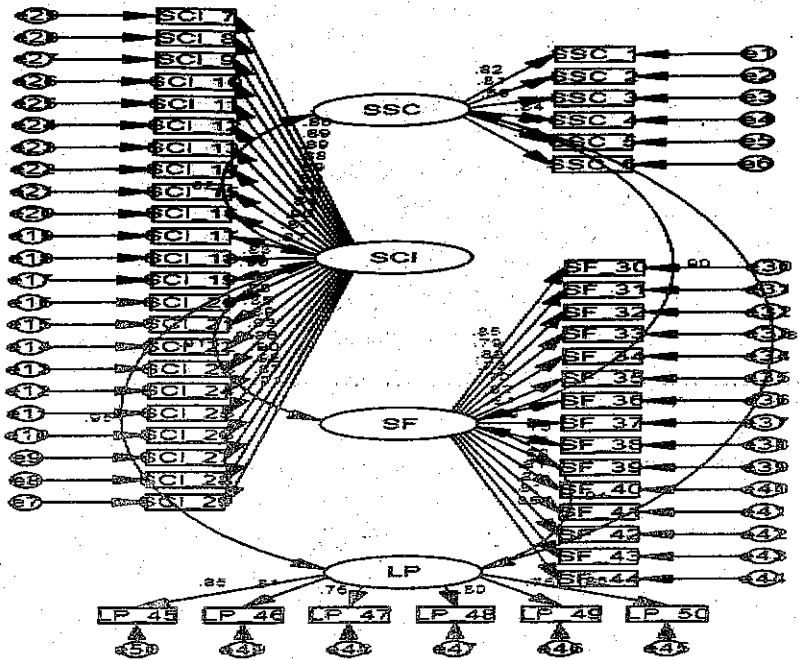


Table (7) Confirmatory Factor Analysis CFA for the Antecedents of SCA constructs

Fit	
X2/Degree of Freedom	6.546
Goodness of Fit Index (GFI)	0.986
Normed Fit Index (NFI)	0.933
Comparative Fit Index (CFI)	0.971
Relative Fit Index (RFI)	0.905
Incremental Fit Index (IFI)	0.974
Tuker-Lewis Index (TLI)	0.946
Root Mean Square Residual (RMR)	0.045
Root Mean Square Error of Approximation (RMSEA)	0.068

Source: Statistical Results

Table (8) The Chi-Square value and Degrees of Freedom for the antecedents of SCA.

Sector	HCS	PH
CMIN	9087.806	7652.274
DF	1169	1169

Source: Statistical Results

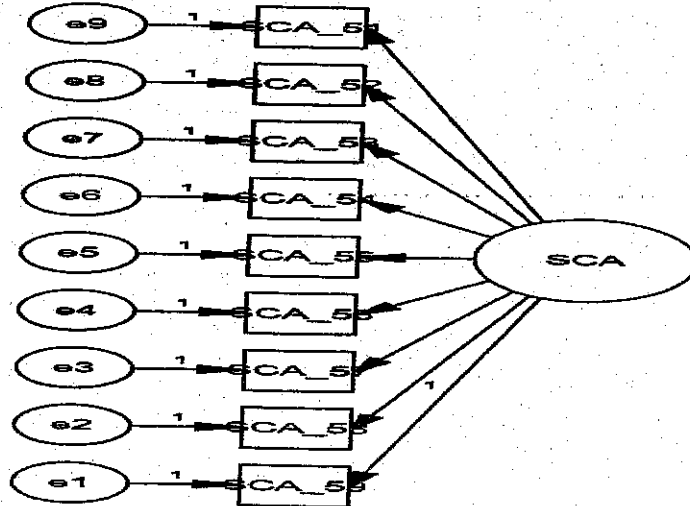


Table (9) Confirmatory Factor Analysis (CFA) for the SCA construct

X2/Degree of Freedom	3.655
Goodness of Fit Index (GFI)	0.903
Normed Fit Index (NFI)	0.889
Comparative Fit Index (CFI)	0.916
Relative Fit Index (RFI)	0.851
Incremental Fit Index (IFI)	0.916
Tucker-Lewis Index (TLI)	0.887
Root Mean Square Residual (RMR)	0.045
Root Mean Square Error of Approximation (RMSEA)	0.016

Source: Statistical Results

Table (10) The Chi-Square value and Degrees of freedom of SCA

Sector	HCS	PH
CMIN	134.676	98.685
DF	27	27

Source: Statistical Results

Overall Model Level Fit:(SAGE Research Methods Datasets, 2016):

Many measures of overall model fit have been developed. Each one indicates whether the modeled relationships among the latent and observed variables replicate the relationships among the observed variables in the data:

A model is regarded as acceptable if:

- The Goodness of Fit Index exceeds .90.
- The Normed Fit Index (NFI) exceeds .90 or .95
- The Comparative Fit Index exceeds .93
- RMS is less than .08 -and ideally less than .05.
- The relative chi-square should be less than 2 or 3

According to these rules of thumb, the results of the confirmatory factor analysis are considered acceptable and the model fit for measuring variables of interest is good.

C: Correlation test:

Table (11) Correlations Matrix between research variables (PH)

Correlations							
	SSC	SCI	SF	LP	X	SCA	SCP
SSC	1	.838**	.872**	.792**	.922**	.798**	.806**
SCI	.838**	1	.901**	.897**	.959**	.870**	.877**
SF	.872**	.901**	1	.881**	.963**	.890**	.879**
LP	.792**	.897**	.881**	1	.945**	.899**	.912**
X	.922**	.959**	.963**	.945**	1	.913**	.918**
SCA	.798**	.870**	.890**	.899**	.913**	1	.870**

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Statistical Results

As the previous tables show there are significant relationships between all the variables of the study. Thus, it can be concluded that:

- 1- There is a significant relationship between all the antecedents of supply chain agility: Strategic Sourcing Capability, Supply Chain Integration, Strategic Flexibility, and Lean Practices at confidence level 99%.
- 2- There is a significant relationship between Strategic Sourcing Capability, Supply Chain Integration, Strategic Flexibility, and Lean Practices and Supply Chain Agility at confidence level 99%.

D: Regression Analysis:

Table (12) Multiple regression analysis of the independent variables and SCA(PH)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.042	.095		-.439	.661
SSC	.116	.051	.114	2.289	.023
SCI	.384	.044	.401	8.806	.000
SF	.246	.070	.241	3.507	.001
LP	.259	.081	.247	3.212	.002
R Square	.845		F	262.333	
Adjusted R Square	.842		Sig	.000 ^b	

a. Dependent Variable: SCA

Source: Statistical Results

As shown in the previous table, the presumed antecedents of supply chain agility have a significant relationship with this capability. The results show that supply chain integration has the largest coefficient of correlation of 0.401, followed by both lean production and strategic flexibility with small difference between coefficients of 0.247 and 0.241, and the strategic sourcing coefficient is 0.114.

Therefore, the regression equation will be as follow:

$$Y (PH) = \text{constant} + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4$$

$$SCA (PH) = -.034 + .114 \text{ strategic sourcing capability} + .401 \text{ supply chain integration} + .241 \text{ strategic flexibility} + .247 \text{ lean practices.}$$

10- Research Discussion and Conclusion:

It was found that there is a significant relationship between strategic sourcing capabilities, supply chain integration, firm's strategic flexibility, and lean practices have a significant relationship with supply chain agility in the pharmaceutical industry.

Ranking the antecedents of supply chain agility according to its contribution to reinforcing this capability is important to stand on priorities of the improvement efforts and investments. for the pharmaceutical sector, it is more substantial to improve integration both within the firm and with external partners and develop a transparent supply chain where cost minimization and crisis management can be boosted.

SSC, SCI, SF, LP are found to be significant antecedents to supply chain agility which in turn significantly affects performance. However, their relative importance in each sector was found to be different. Reinforcing internal and external integration is a priority when it comes to improving pharmaceutical supply chain agility. Lean practices and strategic flexibility are the next influential indicators of SCA in the pharmaceutical industry.

Supply chain performance is largely influenced by the agile capability of its processes. Therefore, tracing the causes of inability to proactively respond to change is conclusive to improve this capability in manufacturing-based as well as service-based supply chains. The level of responsiveness of the SC is inherent in the processes of internal and external integration and information sharing, the flexibility of designing

products and processes and the supply process, the emphasize on continuous improvement and waste removal, and lastly on enforcing the strategic capability of the sourcing function.

In manufacturing supply chains, where the production process is rigorous to a large extent, Internal and external integration would support adhering to the strategic plan to a large extent and avoid disruption that might arise as a result of lack of coordination and mutual projections and synchronizing activities between internal and external supply chain partners.

11- Research Contribution:

- The study of Chan et. al. (2016) which investigated the effects of strategic and manufacturing flexibilities and supply chain agility on firm performance pointed out that most relevant studies discuss the issue of Supply chain agility in terms of the benefits involved, meaning that there is a research gap that calls for a more in-depth empirical examination of the role of supply chain agility and the linkages to its antecedents and consequences. In addition, few empirical studies have been conducted to confirm the significance of these relationships.
- This research is investigating a fateful determinant of organizations' survival and growth in today's rapidly changing environmental forces that largely and extensively affects supply chain performance.
- This research is tackling organizations' work structure to examine their susceptibility to lay the foundations of strategic capabilities, Integration, flexibility, and lean operation.

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