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Impact of Improved Supply Chain Management on Innovation

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Abstract

The purpose of this study is to determine the impact of improving supply chain management on fostering innovation within Lebanese SMEs. The results and conclusions were obtained after studying professionals and performing reliability analysis, factor analysis, and regression analysis.

The positive relationship was found, and improved supply chain management was proved as a primary source of innovation in businesses which is highly required in the current global world characterized by fierce competition, and unprecedented challenges.

Keywords: Supply chain management; Innovation; SMEs

Introduction

General background

Today, competition is less between organizations, and more between supply chains. The diverse practices of supply chain management (SCM) are essential in competition. These SCM practices will also help in improving organizational performance.

Supply chain activities have critical influences on the whole business, and many CEOs are not aware of this reality. When a business neglects issues related to these important functions, severe damages may occur. To assess the performance of individuals in the supply chain, a CEO must be updated in the latest trends and knowledge of SCM [1].

Need and importance of the study

Today's global business world is fast-changing and highly competitive. Firms must be organized and efficient, controlling their supply chains, whilst also innovating and creating new products. There is limited research on the relationship between supply chain management and innovation. Improving the management of the supply chain by capitalizing on the significant shift in technology, infrastructure, and the internet will enhance innovation and business competitiveness. This is especially relevant to small and medium sized enterprises and growing economies, like Lebanon.

Objective of the study

The objective of the study is to examine the extent to which improving supply chain management will drive innovation of SMEs in Lebanon.

Statement of the research question

The research question is the following: "What is the impact of improving supply chain management on innovation in Lebanese SMEs?"

This study will investigate and discuss the changes seen in organizations after improving the supply chain management practices.

Research hypotheses

H0: Improving Supply Chain Management will promote innovation;

H1: Improving Supply Chain Management doesn't promote innovation;

Literature Review

Improved supply chain management

Lia, Ragu-Nathanb, Ragu-Nathanb, and Raob performed quantitative research using data collected from 196 organizations and structural equation modeling to find different methods to achieve an effective supply chain and to obtain a competitive advantage [2]. They found that when suppliers participate in early stages of product design, the costs are lower, and designs are more easily assessed, and products are different than those offered by competitors.

The adoption of product innovation is a critical element of SCM to offer new products or existing products with new characteristics to gain competitive advantage, and respond better to customers' needs [2].

The domain of the supply chain is divided into several key areas to which a leader may have positive or negative impact. These are: recruiting skillful supply chain employees and executives, participating in the resolution of complex cross-functional issues, providing reward initiatives for successful supply chain performances, gaining personal knowledge and new learning about the trends of supply chains, and encouraging the adoption of benchmarking practices [1].

Due to the difficulty in finding employees that satisfy needed talents in supply chains, and to reduce costs, companies are increasingly hiring external workers. This can help firms respond to market demands, bring new expertise, and increase organizational efficiency. The activities of acquiring these talents in supply chains are important means to achieve organizational goals based on needs and wants. Integrating an external workforce into the whole organization has many considerations, mainly in terms of barriers imposed by organizational culture, limited resources, and legal conditions. Maintaining a bench of skilled employees for all departments, not just the supply chain is an important business requirement [3].

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One approach to supply chain design is having a portfolio of designs. Olavson et al. found that world-class supply chain performance is the result of aligning agility with adaptability [4]. By adopting a portfolio of supply chain designs, a business will survive in the short-term and long-term. For the short-term, responsiveness can be improved in a volatile macroeconomic environment. For the long-term, a diverse portfolio can enable businesses to face fast changing conditions, and to meet new trends with updated versions of products as to keep high levels of demand.

Logistics in supply chain management is composed of all kinds of resources and knowledge spread throughout an organization in addition to diverse activities of storage, delivery, and after-sales service. Changes are continually occurring in logistics to respond to increasing needs for flexibility, efficiency, and openness in a global boundary-less competitive world [5]. The authors found that logistics are a main source of competitive advantage in terms of improving the activities of entering, packing, shipping and distributing physical goods. The latest developments in information technology can be adopted for a supply chain. Logistics may be outsourced to benefit from decreasing costs, answer fluctuations in demand, or reduce capital used in operating a business. Some challenges exist after outsourcing logistics like delays in service, poor quality, and product damages [5].

Organizational resilience is a principal characteristic to possess to cope with global challenges. It is a source of competitive advantage when managed well, and when companies can benefit from disruptions. Sheffi and Rice studied Hitachi and its global supply chain and found resilience can be built by three key processes: increasing redundancy, building flexibility, and changing the corporate culture [6].

Redundancy is achieved through maintaining a high level of inventory, low capacity utilization, and increasing the number of suppliers. This is a contradiction to the most popular practices of Toyota Production System (TPS), lean production processes, and Six Sigma that focus all on reducing resources. Redundancy is a way to reduce the capacity of being efficient.

Flexibility in a supply chain is another way to resist disruptions. It is achieved through adoption of standardized processes, using simultaneous processes, planning to postpone by keeping some products in semi-finished conditions, aligning procurement strategies with suppliers, and knowing suppliers well to better respond to fluctuations [6].

SMEs in Lebanon

Starting and growing a business in a challenging global environment requires many elements that play key roles in business activities, starting from supportive macroeconomic elements to adequate regulations, laws, financing, services, and incentives on business transactions and trade [7]. Small to medium sized enterprises (SMEs) contribute greatly to the Lebanese economy, but they face challenges and difficulties requiring direct support on multiple levels, in many areas, including: employment, infrastructure, financial concerns, market structure, legal framework, research and development, innovation, capabilities, and capital [8].

SMEs have an important presence in the Lebanese economy and they play a key role, occupying 97% of the total businesses in the country; SMEs employ more than 51% of the working people in Lebanon. They are concentrated in the retail, machines, and motor, and services sectors [8]. In past decades, SMEs and entrepreneurs have been supported by both public and private sectors. In the public sector, there are currently 45 initiatives supporting the development of legal infrastructures and market structure in Lebanon, focusing on all types of industries, especially the most promising ones like agriculture and information and communication technology (ICT). In the private sector, at least 100 initiatives exist, concentrated in the development of firm capabilities and finding potential sources of capital, primarily in the ICT industry [8]. Efforts to support SMEs go back to the early 2000s, when many solutions started to be proposed including: incubators, coaching, networking, online support platforms, and centers of entrepreneurship on university campuses [8].

In Lebanon, starting in 1990, a new period of economic and political development began with the reconstruction of the infrastructure in many sectors; this led to growth and sustainable development. Sometimes economic stabilization was initiated through increasing currency rates. The Lebanese economy was in a period of continuous fluctuation. The aim was to obtain a balance to strengthen the Lebanese currency and increase confidence in Lebanon. These efforts were complemented by funding from Paris for the reconstruction of the country [9].

In Lebanon, commerce dominated, and the agriculture industry was damaged by low investment and low output. Lebanon has underdeveloped road infrastructure and an ineffectively managed natural supply of water, which increases production costs and puts pressure on firms and households. Lebanese enterprises pursued the latest technological developments and Lebanese business people are tech savvy in general; this is an advantage for the local economy. With stable financial and political platforms, the means of payments was developed continuously in recent years in Lebanon. The new credit systems, at low and medium levels, are very effective in ensuring that people in real need of funds will get them for developing their businesses [10].

According to the Organization for Economic Co-operation and Development, barriers to entry are essential elements of markets, playing a key role in competition [11]. Traditionally barriers included the factors of time, and the amount of money required by a new business to start operating in a market, however, barriers to entry can be divided into two groups: the artificial barriers and the natural barriers. The first group consists of laws and regulations that restrict a company's entrance in given market, while the second group is the technological factors, market factors (like market share) and others obstacles that exist in the environment and influence the entry of a business. The study of these barriers is very important, starting with the assessment of technological levels in the country, followed by the legal factors, the availability of raw materials, etc.

Securing capital in Lebanon has never been easy for SMEs. Banks in Lebanon prefer to invest in limited numbers of large businesses, instead of large number of small businesses [9]. The central bank is trying to resolve this issue by motivating the lending of Lebanese lira with lower interest rates covering a wide range of industries.

Innovation

The efforts of innovation in managerial processes can have long-term benefits for a business. A surge of competitive advantage, through innovation, may change the future of any business. Successful businesses update their processes and systems to improve speed and efficiency. Management innovation is becoming essential in every company. The long-term advantage of management innovation is the direct result of one of the following three characteristics: the presence of new and unique business processes that challenge managers, innovation as a

part of a set of procedures and methods, or it is part of a continuous program of inventing in the business.

Not all ideas and efforts are turned into breakthrough innovations, however. Usually, a successful innovation is the result of dozens of failed attempts. The more a company tries to innovate, and introduce new products, services, processes; the more it will increase the chance of presenting a new Big Thing, a great innovation [12].

Innovations that create value will attract other businesses to imitate them, such as the increase in new tablets following the innovation of Apple's iPad. Companies must think about the complementary assets, skills, products and services that will help customers to stay loyal to the new innovation. Continuous investment in innovation is essential to maintain a powerful position in the market, and innovation must be performed in both technology, and business process [13].

Despite the importance of innovation, many companies fail in performing it due to the absence of correct guidance for innovation, and lack of formal procedures and rules to perform it. It requires an effective innovation process that is characterised by five major steps, as follows: generating and mobilizing the idea, advocacy and screening of potential ideas, experimentation, commercialization, and finally, diffusion and implementation. A successful innovation requires the allocation of adequate resources, a well-developed marketing plan, and a supportive culture [14].

To be successful, innovation should be designed as a set of procedures that will lead to an end from the start of the activities until an innovative product, service, or process is achieved. Companies need a pipeline of innovation based on evidence that promotes an environment of speed and urgency that help a business to analyse problems and prioritize, using the ideas, resources, and the technologies of the company. Organizations today are selecting lean innovation, employing the following actions: innovation sourcing, curation, prioritization, resolution search and hypothesis examination, incubation, integration, and refactoring.

Innovation sourcing consists of listing the technologies, problems, and ideas that might be improved. Curation means going out and discussing ideas with employees and customers. Prioritization consists of sorting the innovative ideas according to many variables. It is preferable to use McKinsey's Three Horizons model [15]. The resolution search and hypothesis examination is taking the data that passed the prioritization steps and analysing them through data analysis, and hypothesis testing. Incubation is collecting more data and developing the idea. Integration consists of entering the innovation in the business, considering the technical and organizational requirements and challenges. Refactoring consists of fixing diverse elements to make the innovation process more stable, often by adjusting the structure of the innovation team, moving ideas and prototypes into the stage of being produced, and adhering to tight deadlines and strict budgets [15].

There is no preferred type of innovation; the four main types are: routine, disruptive, radical, and architectural. Routine innovation is based on a company's existing technology and current business model. Intel is an example of routine innovation that periodically launches more advanced and powerful microprocessors. Disruptive innovation occurs when a business develops a business model with a breakthrough in technology. Google's Android operating system for mobile devices is an example of disruptive innovation, allowing the product to penetrate by offering it free in the market whilst Apple and Microsoft failed to do the same. Radical innovation is a pure technological breakthrough. Genetic engineering and biotechnology are examples of radical innovation. Architectural innovation involves breakthrough technology and disruptive innovation at the same, and this is the most challenging and difficult type of innovation. Digital photography is an example of architectural innovation [13].

Business leaders face many challenges that can limit organizational innovativeness. The most important challenges are: a failure to predict how things should be changed, poor decisions about what ideas to innovate, and incapacity to apply all good ideas. These issues occur at different steps of the innovation process. Green defines innovation as the use of technology in the development of new products, services, and processes [16]. It means to start something new that provides value, and to complete good ideas, transforming them into new products and services. Failure to innovate indicates that a firm does not have the needed skills to discover, evaluate, and execute potential ideas [16].

Procedures and Methodology

Methodology

This quantitative study was performed using a questionnaire. In order to answer the research question, the researchers relied on Saunders' research onion. Regarding the philosophy, the researchers chose an objectivism ontology, with a positivism epistemology, and weak axiology.

The approach used is deductive, through a quantitative method. Research strategy is a survey, and the technique used is a structured questionnaire completed in writing, and containing 11 statements, pilot tested for reliability and validity by six experts in the academic research.

Variables and their measurement

In this study, the independent variable is: supply chain management and the dependent variable is innovation. The variables were studied in the questionnaire using a Likert 5-point type scale ranging from strongly disagree (1-SD), disagree (2-D), undecided (3-U), agree (4-A), to strongly agree (5-SA).

The dependent variable "innovation" is measured by eight statements taken from previous researches: El Khoury, Chesbrough [8,17].

The independent variable "supply chain management" is measured by three statements taken from previous researches: KellyOCG, Olavson et al., Gunasekaran and Ngai, Sheffi and Rice [1,3-6].

Conceptual framework for analyzing data

Different statistical tests were carried by the researcher, including descriptive statistics, Kaiser-Meyer-Olkin (KMO) test, Bartlett's Test of Sphericity, reliability analysis, Cronbach's Alpha, and Factor Analysis. SPSS software was used for data analysis.

Population and sample selection

The sample is composed of 262 respondents chosen from Lebanese SMEs. Respondents function in managerial positions, mainly middle and top managers. The respondents were chosen from different departments with diverse specifications and qualifications. The sampling technique is random sample, and the sample represents the whole population which will enable the researcher to generalize obtained results.

Findings

The sampling adopted in this study is adequate as KMO=0.945 Thus

the adopted statistical sample size will lead to a reduction of chance through ensuring the required precision.

The variables used are suitable for structure detection as Bartlett's Test of Sphericity, and the factor analysis is useful with the data in this study as the significance level is equal 0.000 (Tables 1 and 1a).

Reliability Analysis and Cronbach's alpha

Scale: Improving supply chain management (SCM): Tables 2-5 show that the ninth dimension entitled "Improving Supply Chain Management" is highly reliable with Cronbach's alpha equals 0.738.

Scale: Innovation: Tables 6-9 show that the second dimension entitled "Innovativeness" is highly reliable with Cronbach's alpha equals 0.915.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.945
Bartlett's Test of Sphericity Approx. Chi-Square	8811.662
Df	1128
Sig.	0

Table 1: KMO and Bartlett's Test.

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	94	35.9	35.9	35.9
	Male	168	64.1	64.1	100
	Total	262	100	100	-
Out of 262 respondents, 168 or 64.1 % are males and 94 or 35.9 % are females.					

Table 1a: The average age of the respondents and work experience is 42 and 9 years.

		N	%
Cases	Valid	262	100
	Excluded[a]	0	0
	Total	262	100
[a]Listwise deletion based on all variables in the procedure.			

Table 2: Case processing summary.

Cronbach's Alpha	Cronbach's Alpha based on standardized items	No of items
0.738	0.739	3

Table 3: Reliability statistics.

	Mean	Std. Deviation	N
During the last years, my company reduced labor costs per unit output	3.271	1.0204	262
During the last years, my company reduced inventory costs per unit output	3.3321	1.00594	262
Return on assets (ROA, %) in our company is similar to the industry average	3.3053	1.01629	262

Table 4: Item statistics.

	Mean	Minimum	Maximum	Range	Maximum /Minimum	Variance	N of Items
Item means	3.303	3.271	3.332	0.061	1.019	0.001	3

Table 5: Summary item statistics.

		N	%
Cases	Valid	262	100
	Excluded[a]	0	0
	Total	262	100
a. Listwise deletion based on all variables in the procedure.			

Table 6: Case processing summary.

It is worth to mention here that when respondents were asked: "During the last years, my company improved methods of manufacturing or producing goods or services". Table 10 and Figure 1 show that almost two thirds of the selected sample agree and strongly agree that their companies improved methods of manufacturing or producing goods or services.

	Mean	Std. Deviation	N
During the last years, my company improved methods of manufacturing or producing goods or services	3.7176	1.08119	262
During the last years, my company improved methods of distributing goods or services	3.6679	1.04333	262
During the last years, my company improved maintenance systems or operations for purchasing, accounting, or computing	3.6718	1.04638	262
During the last years, my company obtained advanced machinery, equipment and computer hardware or software	3.6412	1.10081	262
During the last years, my company launched procedures and technical preparations	3.5267	1.15688	262
During the last years, my company increased its range of goods or services	3.6183	1.09655	262
During the last years, my company entered new markets or increased market share	3.6069	1.06225	262
During the last years, my company improved flexibility of production or service provision	3.5229	0.99301	262

Table 7: Item statistics.

Cronbach's Alpha	Cronbach's Alpha based on standardized items	No of items
0.915	0.916	8

Table 8: Reliability statistics.

	Mean	Minimum	Maximum	Range	Maximum /Minimum	Variance	N of Items
Item means	3.622	3.523	3.718	0.195	1.055	0.005	8

Table 9: Summary item statistics.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	11	4.2	4.2	4.2
	Disagree	28	10.7	10.7	14.9
	Undecided	50	19.1	19.1	34
	Agree	108	41.2	41.2	75.2
	Strongly Agree	65	24.8	24.8	100
	Total	262	100	100	-
During the last years, my company improved methods of manufacturing or producing goods or services.					

Table 10: Improved methods of manufacturing or producing goods or services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	9	3.4	3.4	3.4
	Disagree	31	11.8	11.8	15.3
	Undecided	53	20.2	20.2	35.5
	Agree	114	43.5	43.5	79
	Strongly Agree	55	21	21	100
	Total	262	100	100	
During the last years, my company improved methods of distributing goods or services.					

Table 11: Improved methods of distributing goods or services.

When respondents were asked: "During the last years, my company improved methods of distributing goods or services". Table 11 and Figure 2 show that sixty five per cent of the selected samples agree and strongly agree that their companies improved methods of distributing goods or services.

When respondents were asked: "During the last years, my company improved maintenance systems or operations for purchasing, accounting, or computing". Table 12 and Figure 3 show that almost seventy percent of the selected sample agree and strongly agree that their companies improved maintenance systems or operations for purchasing, accounting, or computing.

When respondents were asked: "During the last years, my company obtained advanced machinery, equipment and computer hardware or software"; Table 12a and Figure 4 show that almost sixty six per cent of the selected sample agree and strongly agree that their companies obtained advanced machinery, equipment, and computer hardware or software.

When respondents were asked: "During the last years, my company launched procedures and technical preparations", Table 13 and Figure 5 show that almost fifty eight per cent of the selected sample agree and

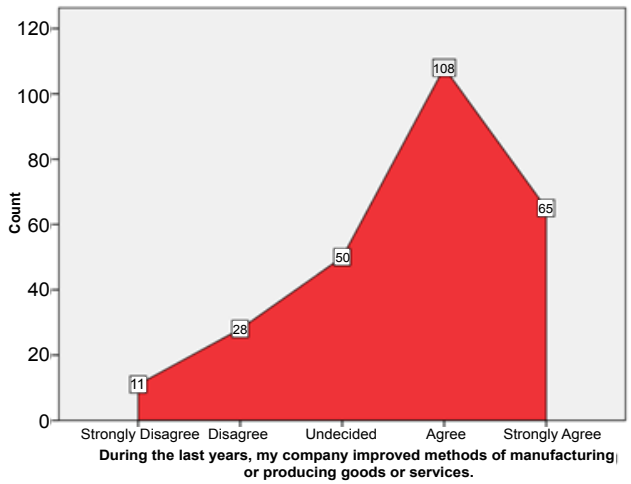

Figure 1: Improved Methods of manufacturing or producing goods or services.

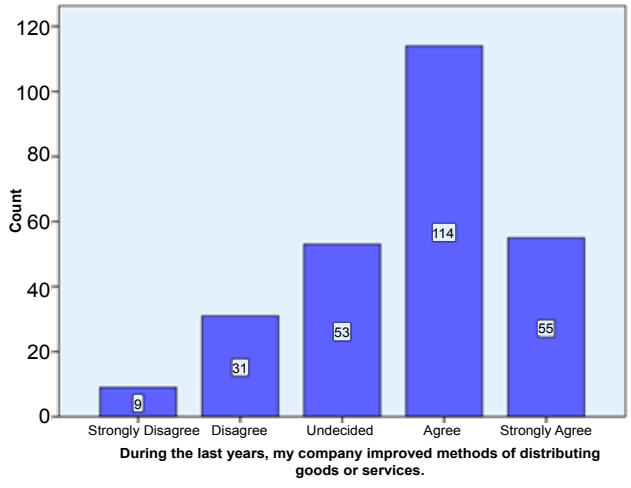

Figure 2: Improved methods of distributing goods or services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	11	4.2	4.2	4.2
	Disagree	32	12.2	12.2	16.4
	Undecided	38	14.5	14.5	30.9
	Agree	132	50.4	50.4	81.3
	Strongly Agree	49	18.7	18.7	100
	Total	262	100	100	-

During the last years, my company improved maintenance systems or operations for purchasing, accounting, or computing.

Table 12: Improved maintenance systems or operations for purchasing, accounting, or computing.

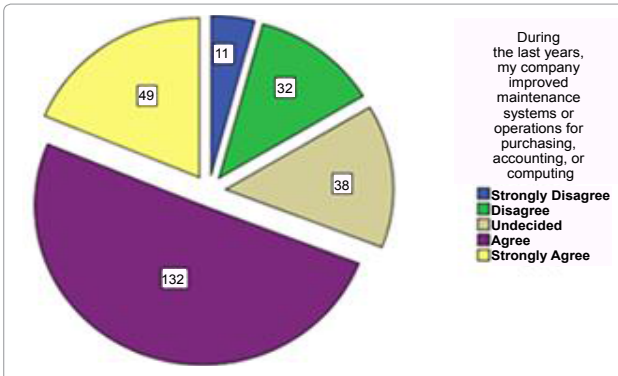

Figure 3: Improved maintenance systems or operations for purchasing, accounting, or computing.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	11	4.2	4.2	4.2
	Disagree	39	14.9	14.9	19.1
	Undecided	39	14.9	14.9	34
	Agree	117	44.7	44.7	78.6
	Strongly Agree	56	21.4	21.4	100
	Total	262	100	100	-

During the last years, my company obtained advanced machinery, equipment and computer hardware or software.

Table 12a: Advanced machinery, equipment and computer hardware or software.

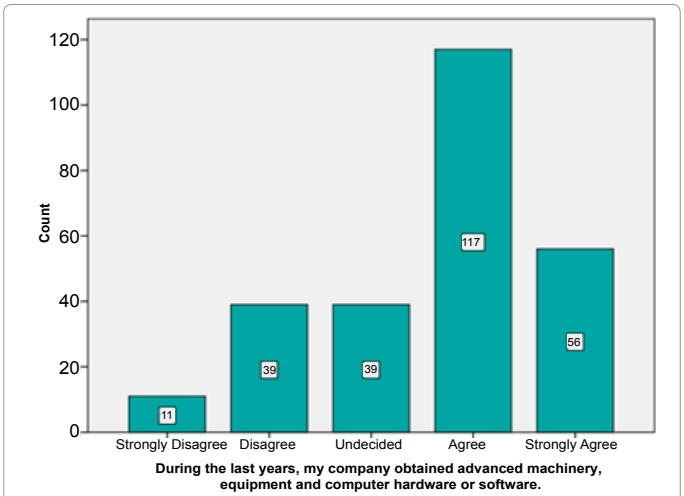

Figure 4: Advanced machinery, equipment and computer hardware or software.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	4.6	4.6	4.6
	Disagree	48	18.3	18.3	22.9
	Undecided	50	19.1	19.1	42
	Agree	94	35.9	35.9	77.9
	Strongly Agree	58	22.1	22.1	100
	Total	262	100	100	-
During the last years, my company launched procedures and technical preparations.					

Table 13: Launching procedures and technical preparations.

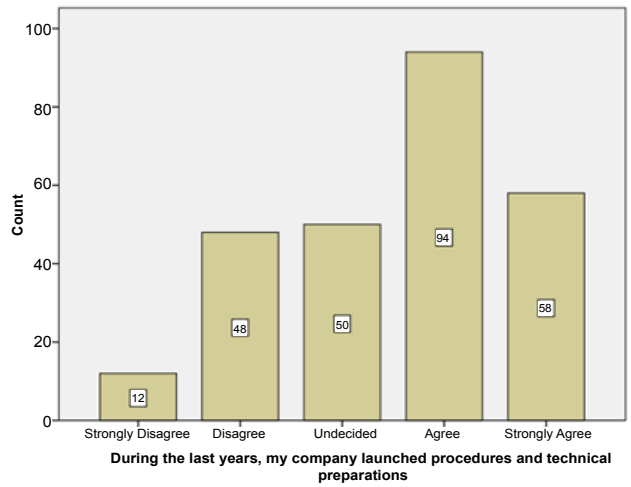

Figure 5: Launched procedures and technical preparations.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	13	5	5	5
	Disagree	37	14.1	14.1	19.1
	Undecided	37	14.1	14.1	33.2
	Agree	125	47.7	47.7	80.9
	Strongly Agree	50	19.1	19.1	100
	Total	262	100	100	-
During the last years, my company increased its range of goods or services.					

Table 14: Increased the range of goods or services.

strongly agree that their companies launched procedures and technical preparations.

When respondents were asked: "During the last years, my company increased its range of goods or services", Table 14 and Figure 6 show that almost sixty seven per cent of the selected sample agree and strongly agree that their companies increased the range of goods or services.

When respondents were asked: "During the last years, my company entered new markets or increased market share", Table 15 and Figure 7 show that almost sixty six per cent of the selected sample agree and strongly agree that their companies entered new markets or increased market share.

When respondents were asked: "During the last years, my company improved flexibility of production or service provision", Table 16 and Figure 8 show that almost fifty eight per cent of the selected sample

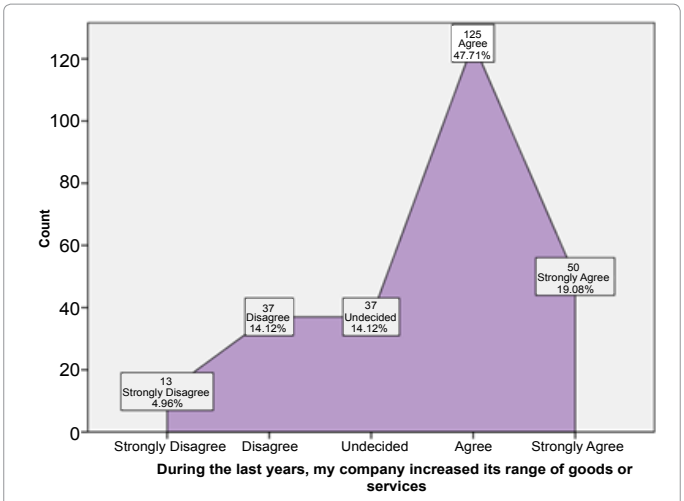

Figure 6: Increased its range of goods or services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	11	4.2	4.2	4.2
	Disagree	38	14.5	14.5	18.7
	Undecided	39	14.9	14.9	33.6
	Agree	129	49.2	49.2	82.8
	Strongly Agree	45	17.2	17.2	100
	Total	262	100	100	-
During the last years, my company entered new markets or increased market share					

Table 15: Entered new markets or increased market share.

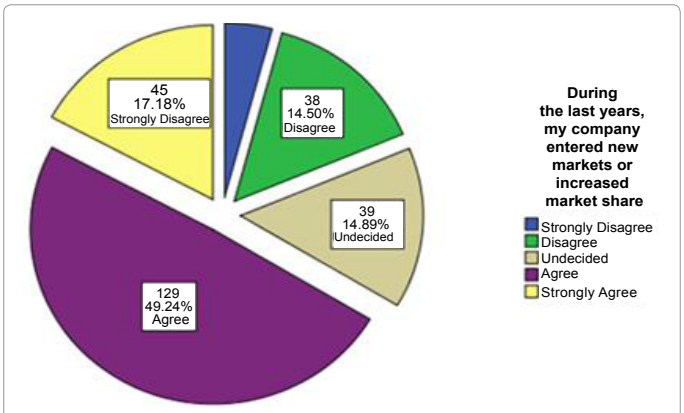

Figure 7: Entered new markets or increased market.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	9	3.4	3.4	3.4
	Disagree	34	13	13	16.4
	Undecided	65	24.8	24.8	41.2
	Agree	119	45.4	45.4	86.6
	Strongly Agree	35	13.4	13.4	100
	Total	262	100	100	-
During the last years, my company improved flexibility of production or service provision.					

Table 16: Improved flexibility of production or service provision.

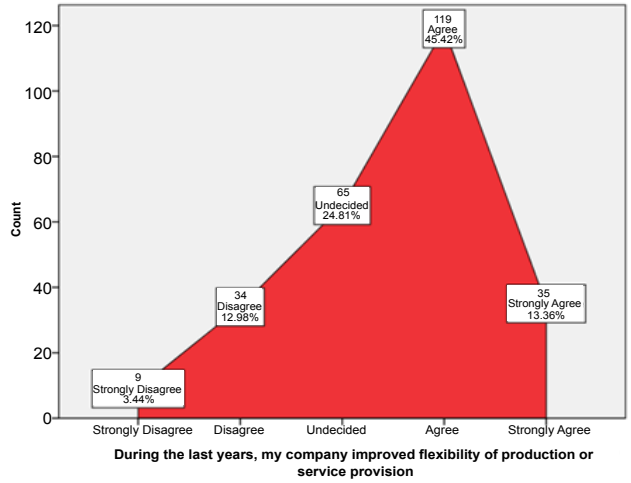

Figure 8: Improved flexibility of production or service provision.

agree and strongly agree that their companies improved flexibility of production or service provision.

The researcher found in this study that almost two thirds of the selected sample agree and strongly agree that their companies improved methods of manufacturing or producing goods or services.

While in the literature review, these improvements in methods of manufacturing or producing goods or services are considered among the important means of successful Supply Chain. It will develop the Supply Chain activities as to play an essential role in influencing the whole business as presented in the literature review according to Slone et al. [1].

Many alternatives were discussed previously as outsourcing, training and development, in addition to heavily hiring outsiders. Those are the consultant, experts, or contingent workers [3]. External workers will improve the results of the business to be more effective [3]. Adopting the latest technologies in supply chain management will improve it [1]. This will be achieved also through a complete understanding of strategic objectives of the business [4].

Findings of this study showed that sixty five per cent of the selected sample agree and strongly agree that their companies improved methods of distributing goods or services.

While literature review focused on adopting new supply chain activities and techniques while highlighting the importance of a portfolio of supply chain designs to be able to gain agility with adaptability. The benefits will be on both short-term as well as long-term to strengthen business against all quick and large scale changes in the environment. We can add also the fierce competition and the availability of new behaviors and perceptions regarding pricing and responsiveness, increasing the complexity [4].

According to Lee in literature review, global supply chains must have the following Triple-A: Agility, Adaptability, and Alignment [18]. Whenever available together, the company will gain competitive advantage against it rivals. Agility is to respond quickly to short-term demand fluctuations in the market, and to stay flexible and able to deal smoothly with disruptions. Adaptability is to respond to all fluctuations in the market by being able to make direct changes in products, strategies, and technologies. Alignment is to find diverse alternatives in supply chain to improve business performance.

The results of this study reveal that almost seventy percent of the selected sample agree and strongly agree that their companies improved maintenance systems or operations for purchasing, accounting, or computing.

And literature review discussed the continuous improvement of activities of production and distribution as well as marketing and finance, and this is done through adopting the latest technologies available, and one of them is the ERP system to gain competitive advantage and more operational efficiency [19].

ERP systems cover all modules of procurement, inventory, order management, accounting, etc. Also improvement are to be achieved in logistics as for entering, packing, shipping and distributing of physical goods [5].

According to KellyOCG, 12% of external workforce once recruited for the supply chain will be overseen by purchasing department [3].

Computing and the use of Information technology have great impact on accounting systems by computerizing all daily transactions [20].

It is found that almost sixty six per cent of the selected sample agree and strongly agree that their companies obtained advanced machinery, equipment, and computer hardware and software.

And literature review highlighted this importance of increasing SCM effectiveness through innovations like the advanced bar codes, RFID (Radio Frequency Identification) devices, etc., which necessitates leaders to stay continually updated of latest technological advancements [1].

Internet of Things (IoT) are adopted in manufacturing to improve processes through automation, connectivity, and sharing of information as well as knowledge which will make the experience more informative using sensors and advanced hardware. All these changes will result into more flexible and efficient Supply Chain with possibility of real-time control.

Just-In-Time practices in SCM, mainly throughout the production processes will help the business to stay ahead of competition, and to reduce costs while necessitating a commitment from diverse suppliers [20].

According to Padmos, this is an era of digital transformation in supply chain, and its influences on businesses are related to leaders' answers to these advancements [21].

It is also found that almost fifty eight per cent of the respondents in the selected sample agree and strongly agree that their companies launched procedures and technical preparations to improve their processes.

And in the literature review, and according to Folkman, technical expertise is from the most important characteristics of leaders [22]. But keeping excellent technically skillful individuals remain a challenge at the level of organizations [23]. And according to Slone et al. [1] to be prepared for competition, leaders must start by learning the latest trends in procedures and technologies of Supply Chain Management.

The researcher in this study found that almost sixty seven per cent of the respondents agree and strongly agree that their companies increased the range of goods or services.

And literature review focused on achieving organizational resilience through three key processes: increasing redundancy, building flexibility,

and changing the corporate culture [6]. However the principle of postponement was introduced as keeping the products in semi-finished situation, which will promote product innovation as well as the ability to update features of these products in a record time better than the competitors, ensuring direct delivery to customers [2].

It is worth mentioning also that the participation of suppliers in early stages of product-design will have positive influences in reducing costs, making designs more accessible, and obtaining products that are different comparing with the ones offered by competitors [2].

The researcher in this study found also that almost sixty six per cent of the selected sample agree and strongly agree that their companies entered new markets or increased market share. And the literature review highlighted that instead of being efficient, the supply chains must be able to answer different changes in markets' structures in a minimal time, supply chains has to be agile, adaptable, and aligned [18].

According to Chesbrough, the flows of knowledge will be used to quicken innovation, and expand the markets for external use of innovation [17]. And in all markets, leaders must change their leadership style to improve their situations and outcomes [24].

The researcher in this study found that almost fifty eight per cent of the respondents agree and strongly agree that their companies improved flexibility of production or service provision.

And literature review raised the flexibility in supply chain as the only method to resist disruptions, and it is done by standardizing processes, adopting postponement practices, and aligning of purchasing strategies with the best supplier relationships [6].

Conclusion and Recommendations

Conclusion

Companies are in continuous search to improve the operational effectiveness through the development of methods of manufacturing or producing more goods or services, improving maintenance systems or operations for purchasing, accounting, or computing, in addition to the investment in advanced machinery, equipment and computer hardware or software.

This will be completed by launching procedures and technical preparations, increasing its range of products or services, entering new markets or increased market share, and increasing the flexibility of production or service provision.

Lebanese businesses are urged to gain competitive advantage in order to survive and develop. And this is done through advanced SCM practices that may lead to organizational success.

The first hypothesis was accepted and therefore the supply chain strategy promotes innovation to be adopted in diverse business practices

Recommendations

Recommendations for decision making: Leaders of organizations must prioritize the improvement of supply chain management practices as soon as possible because they are considered critical and highly important for the companies. Needless to say that leadership is the first step in achieving successful innovation.

Recommendations for policy making: Policy makers must continually update their knowledge about latest technological trends and advancements in supply chain management to stay a one step ahead from competitors.

Recommendations for future research: Future research must study the impact of improved supply chain management on promoting knowledge Management, and effectiveness.

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