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The Roles of Supply Chain Management in Construction Engineering in the Syrian General Company for Housing

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Abstract
The purpose of this paper is to investigate the roles of supply chain management in construction engineering in the Syrian General Company for Housing. In addition, it aims to assessing the level of awareness and understanding the concepts of supply chain management and construction engineering in the Syrian context.
The research methodology involved a survey as a research strategy and quantitative approach, utilized a self-administered questionnaire, to arrive at the major findings of the study. The type of research is a single cross-sectional design in which the collection of data from the respondents was carried out only once. Data was analyzed using the statistical package for social sciences (SPSS).
The paper revealed that there is an effect of supply chain management on construction engineering in the Syrian General Company for Housing. It also revealed that there is a high level of awareness among the respondents about the concepts of supply chain management and construction engineering.
As far as the researcher is aware, this paper is the first to investigate the effect of supply chain management ton construction engineering in the Syrian General Company for Housing.
Keywords: *Supply chain, Supply chain management (SCM), Construction engineering.*

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I. Introduction:

The world is witnessing many challenges, represented by intensive competition, lack of available resources, increasing societal needs. Which requires dynamic changes in all aspects of the organization to ensure survival and continuity in the light of these rapid changes. Therefore, the organization has to continuously explore and identify the potential markets for its products, obtaining a distinct competitive position, expanding its market share, and accessing geographical places far from the organization's location whether within the borders of the country or outside.

Hence comes the importance of supply chain management, which has become a bond, linking the production sites with market and consumption sites, which is why the management of supply chains is considered as one of the vital factors in achieving the competitive advantage of the organization.

Based on the above, the need for supply chain management emerged, due to its ability to enable the organization to achieve competitive advantages, through its role in the relationships between the organization, suppliers, and customers. The supply chain management represents a mixture of science and art to improve the ways how the organization obtains the raw materials needed to provide the service, produce the products, and deliver or ship it to customers, which achieves the continuity and distinction for the organization in the market.

II. Research Problem & Question:

The problem of the study goes back to the fact that the housing sector in Syria are affected by many challenges, and the great damage in the infrastructure sector, which has been affected by political factors in Syria and the region.

As most organizations operate in a work environment characterized by intensive competition, change in the needs and desires of customers and changing market conditions, Therefore the organization is required to build strong relationships with suppliers through efficient and effective supply chain management, and work to secure the best types of support to achieve the set goals.

Considering the above, the problem of research can be identified by the following main question:

To what extent does supply chain management affect the construction engineering in the Syrian General Company for Housing?

III. Literature Review

3.1. Evolution of Supply Chain Management

In the 1950s and 1960s, most manufacturers emphasized mass production to minimize unit production cost as the primary operations strategy, with little product or process flexibility. New product development was slow and relied exclusively on in-house technology and capacity. Bottleneck operations were cushioned with inventory to maintain a balanced line flow, resulting in huge investment in work in process (WIP) inventory. Sharing technology and expertise with customers or suppliers was considered too risky and unacceptable and little emphasis appears to have been placed on cooperative and strategic buyer supplier partnership. The purchasing function was generally regarded as being a service to production, and managers paid limited attention to issues concerned with purchasing. In the 1970s, Manufacturing Resource Planning was introduced, and managers realized the impact of huge WIP on manufacturing cost, quality, and new product development, and delivery lead-time. Manufacturers resorted to new materials management concepts to improve performance within the "four walls" of the company. (Tan, 2001, p.39)

The evolution of supply chain management continued into the 1990s accompanied by increasing logistics and inventory costs and the trend toward market globalization, the challenges associated with improving quality, manufacturing efficiency, customer service, and new product design and development also increased. To deal with these challenges, manufacturers began purchasing from a selected number of certified, high- quality suppliers with excellent service reputations and involved these suppliers in their new product design and development activities as well as in cost, quality, and service improvement initiatives. This is done so by reducing the supply base as much as a single supplier and enter into a long-term agreement as strategic alliance in doing their business. As companies began implementing supply chain management initiatives, they began to understand the necessity of integrating all key business processes among the supply chain participants enabling the supply chain to act and react as one entity. (Ensermu, 2013, p.54)

3.2. Supply Chain Management Definitions

The Council of Supply Chain Management Professionals (CSCMP) (2004), a leading professional organization promoting SCM practice, education, and development, defines SCM as:

SCM encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities, including coordination and collaboration with suppliers, intermediaries, third-party service providers, and customers. Thus, the supply chain encompasses all activities involved in the production and delivery of a final product or service, from the supplier's supplier to the customer's customer.

In essence, supply chain management integrates supply and demand management within and across companies (www.cscmp.org), CSCMP emphasizes that SCM encompasses the management of supply and demand, sourcing of raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, and distribution and delivery to the customer.

Cooper et al. (2007) define SCM as the management and integration of the entire set of business processes that provides products, services and information that add value for customers. (Cooper et al., 2007, p.14)

Several authors have defined supply chain management, Christopher (2003), New andPayne (1995), and Simchi-Levi et al. (2000) define supply chain management as "the integration of key business processes among a network of interdependent suppliers, manufacturers, distribution centers, and retailers in order to improve the flow of goods, services, and information from original suppliers to final customers, with the objectives of reducing system-wide costs while maintaining required service levels" (Stapleton et al., 2006, p.108).

The Global Supply Chain Forum (GSCF) defines supply chain management as "the integration of key business processes from end user through original suppliers, that provides products, services, and information that adds value for customers and other stakeholders" (Lambert et al., 1998, p.1).

Green (2008) stated that the APICS dictionary (1995) describes SCM as – "the processes from initial raw materials to the ultimate consumption of the finished product, linking across supplier-user companies". (Green et al., 2008, p.317)

A supply chain is a network of organizations performing various processes and activities to produce value in the form of products and services for the end customer. (Christopher, 2003, p34)

SCM concerns the integrated and process-oriented approach to the design, manage and control of the supply chain, with the aim of producing value for the end customer, by both improving customer service and lowering cost. (Giannoccaro&Pontrandolfo, 2002, p.153)

Lummus and Vokurka (1999) summarize SCM as "all the activities involved in delivering a product from raw material through to the customer, including sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, delivery to the customer, and the information systems necessary to monitor all of these activities". (Lummus &Vokurka, 1999, p.13)

According to Li et al. (2006) the dual purpose of SCM is to improve the performance of an individual organization as well as that of the entire supply chain. (Li et al., 2006, p.124)

CLM definitions clearly establish that SCM is more broadly conceived than merely "logistics outside the firm". (Lambert, 2004, p.18).

Recent research supports this conception, portraying SCM as a strategic level concept (Stank et al., 2005, p.27).

3.3. Supply chain performance indicators

Supply chain performance is a two-dimensional definition which consists of effectiveness & efficiency, Effectiveness is about "doing the right things" & efficiency is about "doing things right". Supply chain effectiveness relates to the preference of the end-consumer & the sole indicator is consumer satisfaction. (Donald et al., 2006, p.16)

Conversely, supply chain efficiency relates to the objective performance of processes. Efficiency indicators measure an output level against an input level (Arawati, 2011, p.95).

The supply chain operations reference (SCOR) model was introduced in 1996 by the Supply- Chain Council, which is a global organization of firms interested in SCM.

The SCOR model advocates hundreds of performance metrics used in conjunction with five performance attributes: reliability, responsiveness, flexibility, cost, and asset metrics. (Cousins et al, 2006, p.697)

Sabry (2015) states that in modern SCM, quality is taken as a given and that factors in quality management and improvement are somewhat separate from those in SCM development. (Sabry, 2015, p.23)

Supply Chain Council (2006) presents five attributes of SC performance as quoted by (Sillanpää, 2011, p.47):

1. SC reliability: The performance of the SC in delivering the correct product to the correct place, at the correct time, in the correct condition and packaging, in the correct quantity, with the correct documentation, to the correct customer.
2. SC responsiveness: The speed at which a SC provides products to the customer.
3. SC flexibility: The agility of a SC in responding to marketplace changes to gain or maintain competitive advantage.
4. SC costs: The costs associated with operating the SC.
5. SC asset management: The effectiveness of an organization in managing assets to support demand satisfaction. This includes the management of both assets: fixed and working capital.

3.4 Supply Chain Management in Manufacturing

SCM is a concept that originated and flourished in the manufacturing industry. The first visible signs of SCM were in the JIT delivery system, as part of the Toyota Production System (Shingo, 1988, p.115).

This system aimed to regulate supplies to the Toyota motor factory just in the right small amount, just in the right time. The main goal of this system was to drastically decrease inventories, and to electively regulate the suppliers' interaction with the production line. Another stimulus for SCM originated in the field of quality control. As early as 1950, in an address to Japanese industrial leaders, Deming suggested that working with the supplier as a partner in a long-term relationship of loyalty and trust would improve the quality and decrease the costs of production (Deming, 1982, p.196).

After its emergence in the Japanese automotive industry as part of a production system, the conceptual evolution of SCM has resulted in an autonomous status of the concept in industrial management theory, and a distinct subject of scientific research, in addition to the Japanese influence, Western scholars like Burbridge and Forrester provided early contributions to the understanding of supply chains, along with original SCM approaches, other management concepts (e.g. value chain, extended enterprise) have influenced its conceptual evolution, which has led to the present understanding of SCM. (Towill, 1992, p.239).

3.5 Characteristics of Construction Supply Chains

In terms of structure and function, the construction supply chain is characterized by the following elements as O'Brien (1998) suggests:

- It is a converging supply chain directing all materials to the construction site where the object is assembled from incoming materials. The construction factory is set up around the single product, in contrast to manufacturing systems where multiple products pass through the factory and are distributed to many customers. (O'Brien, 1998, p.83)
- It is, apart from rare exceptions, a temporary supply chain producing one-off construction projects through repeated reconfiguration of project organizations. As a result, the construction supply chain is typified

by instability, fragmentation, and especially by the separation between the design and the construction of the built object. (O'Brien, 1998, p.83)

- It is a typical make-to-order supply chain, with every project creating a new product or prototype. There is little repetition, again with minor exceptions. The process can be very similar, however, for projects of a particular kind. (O'Brien, 1998, p.83)

3.6 Introducing the Four Roles of Supply Chain Management in Construction

The characteristics discussed above also have an impact on the management of supply chains. Four major roles of SCM in construction can be recognized, dependent on whether the focus is on the supply chain, the construction site, or both. Vrijhoef (1999) describes these four areas of focus as per the following:

Firstly, the focus may be on the impacts of the supply chain on site activities. The goal is to reduce costs and duration of site activities. In this case, the primary con- sideration is to ensure dependable material and labor flows to the site to avoid disruption to the workflow. This may be achieved by simply focusing on the relationship between the site and direct suppliers. The contractor, whose main interest is in site activities, is in the best position to adopt this focus. (Vrijhoef, 1999, p.136)

Secondly, the focus may be on the supply chain itself, with the goal of reducing costs, especially those relating to logistics, lead-time, and inventory. Material and component suppliers may also adopt this focus. (Vrijhoef, 1999, p.136)

Thirdly, the focus may be on transferring activities from the site to earlier stages of the supply chain. This rationale may simply be to avoid the basically inferior conditions on site, or to achieve wider concurrency between activities, which is not possible with site construction with its many technical dependencies. The goal is again to reduce the total costs and duration. Suppliers or contractors may initiate this focus. (Vrijhoef, 1999, p.136)

Fourthly, the focus may be on the integrated management and improvement of the supply chain and the site production. Thus, site production is subsumed into SCM. Clients, suppliers, or contractors may initiate this focus, it should be noted that the roles as identified above are not mutually exclusive but are often used jointly. (Vrijhoef, 1999, p.136)

This paper's focus is the supply chain of a main contractor. However, there is a fifth important role that lies beyond the scope of this paper, namely management of the construction supply chain by facility, or real estate owners. They may well drive the management and development of the construction supply chain on which they are reliant for the continuation of their business, for instance when they exploit several facilities that need frequent new development and refurbishment. An example of this is the wide-ranging construction related program of BAA Ltd, here, practically all the four roles of SCM are simultaneously applied to improve both the efficiency and the effectiveness of the supply chain. Indeed, this example shows that in addition to contractors, clients who have sufficient construction volume can initiate major improvements in the construction supply chain. (Duncombe, 1997)

3.7 Practical Initiatives to Advance Construction Supply Chains

The following section discusses practical initiatives to advance construction supply chains in each of the four roles.

<u>3.7.1 Role 1:</u>

Improving the interface between site activities and the supply chain: The clearest initiatives of SCM in construction have been in the field of logistics, here, there has been a focus on the cooperation between suppliers and contractors for improving the total flow of material, whereas traditional treatment of construction logistics and material handling has predominantly concentrated on activities occurring on site. (Johnston, 1981, p.112)

<u>3.7.2 Role 2:</u>

Improving the supply chain: This topic includes initiatives aimed at the development of specific supply chains, such as prefabricated concrete elements or elevators, in-depth cost and time analyses are important for identifying potential improvement and for developing supply chains. When developing the supply chain, the trade-off between transportation, inventory and production costs should be borne in mind to achieve global improvement. Productivity and supply chain performance is decreased by the following factors: uncertainty in the supply chain, varying site conditions and varying capacity conditions (O'Brien, 1998, p.89).

<u>3.7.3 Role 3:</u>

Transferring activities from the site to the supply chain: Another group of initiatives aims at the redesign of the supply chain transferring on-site activities o! site. Industrialization, especially prefabrication, can be regarded as a structural means for eliminating on-site activities from the total production chain. Thus, the earlier, and still actual initiatives to wards industrialization of construction must also be seen as a form of SCM concentrating on the design of the supply chain. (Vrijhoef, 1999, 141)

<u>3.7.4 Role 4:</u>

Integration of site and supply chain: new alternatives have been suggested for the integrated management of the supply chain and the construction site. These include open building and sequential procedure. From a production point of view, the basic benefit of open building is in the postponement of the decisions of users regarding the interior of the building. This is realized by separating the infill from the structure. This also provides adaptability for the remaining life cycle of the building so that users can reconfigure the space as their needs change. In the sequential procedure, the idea is to structure the site work as successive realizations of autonomous sequences (this resembles group technology as developed in manufacturing). In both approaches, the goal is to replace construction's usual temporary chains with permanent supply chains. Pre-engineering is another related approach, where the customer may choose a pre-engineered building from a certain range of options. The supply chains for such buildings are typically stable. Design build arrangements, although more restricted in scope, can also be classified in this group. (Bennett et al., 1996, p.129)

In critical terms, prior initiatives on construction SCM have had only limited impact on the industry, and their wider application has been slow. Some of these initiatives are so new that it can be argued that they are in the first stages of their diffusion, typically following an S-curve, which tends to grow slowly in its early phases. Even industrialization, the oldest initiative that exists, has nevertheless not generally made the breakthrough into building construction, a better understanding of construction supply chains is clearly necessary to comprehend the reasons for the difficulties of SCM's advance within construction. (Warszaswki, 1990, p.179)

IV. Research Hypothesis, Variables & Model:

Considering the research problem and its question, the hypothesis is formulated as follows:

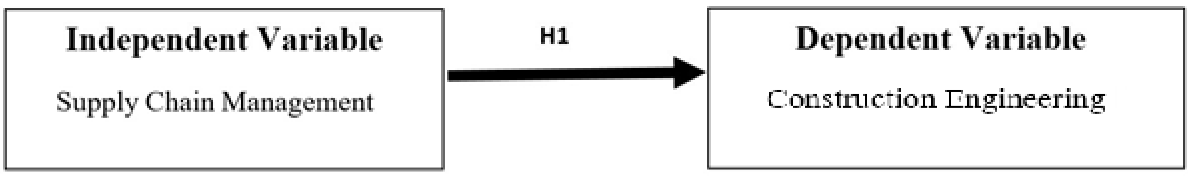
Hypothesis H1:

"There is a statistically significant effect of supply chain management on construction engineering in the Syrian General Company for Housing at the level of significance ($\alpha \leq 0.05$) ".

The present study relied on supply chain management as an independent variable (X), and on construction engineering as a dependent variable (Y).

Considering the above, the model of the study will be as follows:

Fig 1: Research Model



Source: prepared by researcher

V. Research Methodology:

5.1 Study Population and Sample:

The population of this study are the housing companies in Syria, the Syrian General Company for Housing as a case study.

The volume of the sample was determined by using the form of Krejcie& Morgan as the following (Krejcie& Morgan, 1970, p.607):

$$n = \frac{p(1-p)}{\frac{p(1-p)}{N} + \frac{E^2}{SD^2}}$$

n: sample volume.

N: community volume.

P: 0.5 E: 5% SD: 1.96

Since N=93 which is the total number of the workers in Syrian General Company for Housing, so by using the above formula we find that n=75.

The questionnaire had been administrated personally, (90) questionnaires were distributed, (75) returned and analyzed with a (84%) response rate.

5.2. Instrument Validity and Reliability:

Validity: The questionnaire was reviewed by four experts from the Faculty of Economics at Damascus University, whose knowledge and experiences were sufficient in this scope and to make sure that each item is measuring exactly what is intended to be measured. Furthermore, a pilot study was conducted on 30 respondents to test the research instrument before distributing it to the whole sample. Upon the feedback of the experts and the pilot study the questionnaire had been amended taking into consideration their suggestions, comments, and directions to achieve the validity of the instrument.

Reliability: Reliability is the extent to which a variable (or set of variables) is persistent in what is intended to measure (Sekaran, 2003). The Cronbach's Alpha value used to test the reliability of the items measuring each variable. A reliability measure coefficient reflects how well items in a set are positively correlated to one another. Accordingly, the internal consistency method was used in this study to examine the reliability of each variable. Table 1 below shows that all the values of alpha are above 0.60, which are considered to be acceptable.

Table 1: Summary of Reliability Analysis

Components	**Cronbach's Alpha**	**Number of Items**
Supply Chain Management	0.807	4
Construction Engineering	0.728	4
Total	0.835	**8**

Source: SPSS outputs

5.3Internal Consistency Validity:

5.3.1. For Supply chain Management:

Table 2: Pearson Correlation for Supply chain Management

Sentences	**Pearson Correlation**	**Sig. (2-tailed)**
Our company seeks to build long relationships with its suppliers.	.808**	.001
Our company involves its suppliers in planning and development.	.859**	.001
The relationship with the suppliers is based on trust, commitment and mutual benefits.	.881**	.001
Our company continuously measures and evaluates the supplier's satisfaction.	.882**	.001

Source: SPSS outputs

The Pearson Correlation value for all sentences is more than 0.5, which can be considered moderately correlated.

5.3.2 . ForConstruction Engineering:

Table 3: Pearson Correlation for Construction Engineering

Sentences	**Pearson Correlation**	**Sig. (2-tailed)**
The management is reducing costs and duration of site activities by improving the interface between site activities and the supply chain.	.829**	.001
The management is ensuring dependable material and labor flows to the site to avoid disruption to the workflow.	.809**	.001
Activities are earliest transferred to the stages of the supply chain to avoid inferior conditions on site and to achieve wider concurrency.	.781**	.001
The management has an integration and improvement between supply chain and the site production.	.865**	.001

Source: SPSS outputs

The Pearson Correlation value for all sentences is more than 0.5, which can be considered moderately correlated.

5.4. Correlation Analysis:

As indicated in the table (4) the Pearson correlation test was conducted between supply chain management and construction engineering, the results shows that supply chain management is positively and significantly correlated with construction engineering. In other words, supply chain management and construction engineering have a genuine, strong, and positive relationship with correlation coefficient of (0.630) (r=0.630) and significance value less than (0.01). This implies that supply chain management is positively contributing to construction engineering and there is a genuine positive relationship between supply chain management and construction engineering.

Table 4: Correlation Analysis between Supply Chain Management and Construction Engineering

Correlations			
Construct		**Supply Chain Management**	**Construction Engineering**
Supply Chain Management	Pearson Correlation	1	.630**
	Sig. (2-tailed)		.000
	N	75	75
Construction Engineering	Pearson Correlation	.630**	1
	Sig. (2-tailed)	.000	
	N	75	75

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

Source: SPSS outputs

5.5. Test of Normality:

Based on table 5 we find that **Sig** for all variables is more than (0.05), so all data are subject to normal distribution.

Table 5: Test of Normality for the variables

Statistics		**Supply chain management**	**Construction engineering**
N	Valid	75	75
	Missing	0	0
Mean		3.8533	3.7289
Std. Deviation		.95741	1.08039
Skewness		-1.389	-.845
Std. Error of Skewness		.277	.277
Kurtosis		1.732	-.048
Std. Error of Kurtosis		.548	.548

Source: SPSS outputs

5.6. Descriptive Statistics of the Data:

5.6.1. Supply chain Management:

Table 6 below depicts the Mean and Standard Deviation for supply chain management, the values were calculated based on the answers from the respondents.

Table 6: Descriptive Statistics of the Data for Supply chain Management

Supply chain Management	**N**	**Mean**	**Std. Deviation**	**Test Value = 3**		
				t	**df**	**Sig. (2-tailed)**
Our company seeks to build long relationships with its suppliers.	75	3.8400	1.12754	6.452	74	0.000
Our company involves its suppliers in planning and development.	75	3.8267	1.10739	6.465	74	0.000
The relationship with the suppliers is based on trust, commitment and mutual benefits.	75	3.8233	1.10659	6.452	74	0.000
Our company continuously measures and evaluates the supplier’s satisfaction.	75	3.899	1.10521	6.219	74	0.000
Supply chain Management	75	3.8533	0.95741	7.719	74	0.000

Source: SPSS outputs

Based on the data collected from the respondents the mean of the data after the calculation was 3.8533, which is more than 3.4 and less than 4.2, and Sig is 0.000 less than 0.05, so the workers agree to the content of the sentences.
This means the respondents demonstrate optimal level of attitude towards supply chain management. In other words, the respondents show positive attitude towards supply chain management.

5.6.2. Construction Engineering:
Table 7 below depicts the Mean and Standard Deviation for construction engineering, the values were calculated based on the answers from the respondents.

Table 7: Descriptive Statistics of the Data for Construction Engineering

Construction engineering	**N**	**Mean**	**Std. Deviation**	**Test Value = 3**		
				t	**df**	**Sig. (2-tailed)**
The management is reducing costs and duration of site activities by improving the interface between site activities and the supply chain.	75	3.7333	1.25562	5.058	74	0.000
The management is ensuring dependable material and labor flows to the site to avoid disruption to the workflow.	75	3.7733	1.36137	4.919	74	0.000
Activities are earliest transferred to the stages of the supply chain to avoid inferior conditions on site and to achieve wider concurrency.	75	3.6800	1.40616	4.188	74	0.000
The management has an integration and improvement between supply chain and the site production.	75	3.5432	1.42154	4.195	74	0.000
Construction Engineering	75	3.7289	1.08039	5.843	74	0.000

Source: SPSS outputs

Based on the data collected from the respondents the mean of the data after the calculation was 3.7289, which is more than 3.4 and less than 4.2, and Sig is 0.000 less than 0.05, so the workers agree to the content of the sentences.
This means the respondents demonstrate optimal level of attitude towards construction engineering. In other words, the respondents show positive attitude towards construction engineering.

VI. Hypotheses Tests:

Main Hypothesis H1:

"There is a statistically significant effect of supply chain management on construction engineering in the Syrian General Company for Housing at the level of significance ($\alpha \leq 0.05$) ".

In order to test the impact of supply chain management in construction engineering, a simple linear regression method was used, between the supply chain management as independent variable, and construction engineering as dependent variable, as shown in the following tables:

As shown in table (8) below, there is a causal relationship between supply chain management and construction engineering, the correlation coefficient (R) is (0.453), which is greater than zero, that indicates to a positive relationship between supply chain management and Construction engineering.

The square of the correlation (R Square value) is (0.205), which indicates that (20.5%) of the volatility and variability in Construction engineering is explained by supply chain management. In other words, the (R Square) value of (0.205) implies (20.5%) relative contribution of supply chain management in interpreting Construction engineering, the remaining (79.5%) of the changes in the change can be attributed to other factors.

The adjusted R Square is (0.194), which implies that supply chain management can account for (19.4%) of the variation in construction engineering. Although there might be many factors that can explain the variable in construction engineering, nearly (19.4%) of it is explained by supply chain management. This means that the remaining (80.6%) of the variation in Construction engineering cannot be explained by supply chain management.

Table 8: Regression Model between SCM and Construction engineering

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.453[a]	.205	.194	.96621

Source: SPSS outputs

Table (9) below shows the ANOVA results of the regression analysis. The significance value of (0.000) which is less than (0.05) indicates that the regression relationship is significant in predicting the effects of supply chain management in construction engineering, that implies that there is a significant impact of supply chain management in construction engineering.
The F-ratio in the ANOVA table tests whether the overall regression model is a good fit for the data, the F-ratio shows a value of (18.828) which is greater than the F critical, and P-value is (0.000), that indicates that the model used for the study is well fitted, as well as it implies that the model is appropriate and significant.

Table 9: ANOVA Results between SCM and Construction engineering

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.577	1	17.577	18.828	.000[b]
	Residual	68.150	74	.934		
	Total	85.727	75			

Source: SPSS outputs

Table (10) describes that supply chain management with significance of (0.000) which is less than (0.05) has a positive effect in construction engineering.
The positive B-value of (.531) at tolerance level (4.339) implies that supply chain management has a positive influence in construction engineering, meaning that any increase in supply chain management will cause an increase in Construction engineering multiplied by (0.531).
The Regression model can be formulated as the following:

Construction engineering = 1.750 + 0.531 (Supply Chain Management)

Table 10: Regression Coefficients between SCM and Construction engineering

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.750	.477		3.667	.000
	supply chain management	.531	.122	.453	4.339	.000

Source: SPSS outputs

Based on the above tables, we accept the null hypothesis, which means there isa statistically significant effect of supply chain management in construction engineering at the level of significance ($\alpha \leq 0.05$).

VI. Summary of Major Findings

According to the data analysis in the previous sections, summary of the findings presented as follows:

- The majority responses on supply chain management scores a mean greater than (3.4) which implies the fact the concerned company implement the concepts and practices of supply chain management.
- The majority responses on construction engineering scores a mean greater than (3.4) which implies the fact the concerned company implement the concepts and practices of construction engineering.
- The result from the study shows that there is significantly strong correlation between supply chain management and construction engineering, with correlation coefficient of (0.630) (r=0.630) and significance value less than (0.01). This implies that supply chain management is positively contributing to construction engineering and there is a genuine positive relationship between supply chain management and construction engineering.
- The finding from simple linear regression analysis between supply chain management and construction engineering shows the correlation coefficient (R) is (0.453), which is greater than zero, that indicates to a positive relationship between supply chain management and construction engineering, which means there is a

statistically significant impact of supply chain management in construction engineering at the level of significance ($\alpha \leq 0.05$).

VIII. Conclusion:

The correlation analysis and regression analysis show a significant positive correlation between supply chain management and construction engineering, meaning that there is a statistically significant effect of supply chain management in construction engineering at the level of significance ($\alpha \leq 0.05$).
The workers of Syrian General Company for Housing demonstrate optimal level of attitude (positive) towards supply chain management and construction engineering.
However, additional tests and data collections will be needed to come to a more conclusive result as to whether supply chain management is an important factor in analyzing construction engineering.

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