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The effect of supply chain management on competitive advantage: The mediating role of information technology

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A B S T R A C T

This study aims to examine the indirect impact of supply chain management (SCM) in its three dimensions (relationship with suppliers, relationship with intermediaries and distributors, relationship with customers) on the competitive advantage (CA) in its five dimensions (Cost, Quality, Delivery Time, flexibility, and Creativity commitment) with the presence of information technology (IT) as a mediator. Furthermore, 250 questionnaires were distributed in Halawani Industrial Company. The questionnaires analyzed were 226. The Statistical Package for Social Sciences (SPSS) was used to test the hypotheses. The results of the partial analysis show that both relationships with the suppliers and customers contributed to the impact on IT, while the relationship with intermediaries and distributors did not contribute to the impact, but it was supportive of SCM to indirectly influence CA. The most important result of the study was the necessity to evaluate the fundamental competencies; periodically then continuously in order to alter the imperative assets which are the pillars of core competencies including the requirements and conditions regarding strategic thinking and leadership competencies. Also, the study provides an inventory of knowledge about the reality of SCM and its role in achieving CA through IT, which contributes to enriching the library in overall and Jordanian in specific in this subject.

1. Introduction

Actively contribute in the controlling and delivery of resources required to be supplied in the Industrial organizations. Additionally, the process of preparing products (goods and services) and processing them from raw resources until they are complete for consumption by the customer; needs several stages, and this is supply chain management (SCM) practice. In order for an organization to improve the excellence of bought resources or facilities, the phases of the supply chain range from the main providers to the finish customer, and this modern supply chain viewpoint leads to future benefits, thus attaining a competitive advantage (CA) for completely supply chain partners. Additionally, previous studies highlighted that SC motivations on helping novelty, flexibility, and then decreasing the costs of manufacture (Lin & Tseng, 2016). Recently, Olatunji et al. (2019) noted that the upcoming creation demands are connected to the industrial of services and facilities which allow maintainable growth, some strategic involvements used by organizations to reach a CA and the productions that are

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frequently replicated in the CA attained in the organization. So, cooperating at the Supply Chain (SC) level will help to achieve incorporate supportable performs in the organizational process.

The SCM, CA, and Information Technology (IT) have recently received a great deal of attention from both academic and practitioners. Recently, Queiroz and Wamba (2019) noted that the firms thinking to incorporate SCM into their current organizational models would require further consideration on the requirement of apply IT. Zhou et al. (2017) explain that organization which put efforts to present and apply modern IT in their resource arrangement process were more likely to influence the gain CA than their competitors. The topic related to IT and SCM has enjoyed increasing popularity and SC in organization activity attitude for organized and consistent events in the downstream and upstream portion of SC which lead to effectiveness (Konovalenko & Ludwig, 2019).

Furthermore, Gunasekaran et al. (2017) clarify that different literature on the use of IT for attaining CA in SC displays that the adaptation of IT for accomplishing CA has been considered widely. Kousiouris et al. (2019) explain that globalization has assisted in growing the rivalry amongst retailers and would confirm improved supply circumstances for organizations and usage of new IT covering through the range of business, manufacture and delivery, characteristic SCM systems rely on a meeting of services for support. Additionally, evolving IT offers ample opportunity for more reliable SCM performs. Also, Gunasekaran et al. (2017) claim that the attainment of CA in SC through IT depends on the capability of organizations to develop IT tactically and synergistically to attain arrangement, flexibility, and innovation in order to share information and increase performance. Additionally, business analytics using IT support has a strong relationship to supply chain performance and the concept of SC can be used to define the advanced data analytics in SCM by IT tools (Wang et al., 2016).

There are some general and euphoric relationship with competitive cost, where the process of internal integration can be improved with the external supply chain network through communication, partnerships, alliances and cooperation, training and participation of staff before the adoption of new technology or innovation (Hossain et al., 2015; de Barros et al., 2015). Additionally, the concept of IT is a progressively significant element at this time for organizations. However, previous paper absences a combined structure that links to assorted business function for SCM, and a clarification of what way that IT tools impact organization innovation in the SC situation (Han et al., 2017). Therefore, this paper proposes model to explain the impact of SCM on CA through IT. As, the IT growth has altered the organizations and everything features of business processes, and expansions in IT have caused in many likely other results to SCM effectively (Jadhav, 2015). As SCM has become a professional information driven function, IT is enabling SCM as a CA for the organization over other competitors in the market. Also, IT plays a dynamic part in enhance the making decision, which is suitable for association and management within the SC (Jadhav, 2015; Malkawi et al., 2017).

The area of Jordan is considered minor in contrast to nearby countries. The presence of numerous competitors creates rivalry hard. Although SCM is progressively a competitive element in the sustainability of these organizations as well as technology. The importance of this study is that it contributes to the growth of the mechanism of SC in Halawani Industrial Company and maintains its sustainability. Additionally, the proposed model is used for Halawani Industrial and its decision-makers, and making new idea that contribute to increasing the level of interest gained from SCM in achieving CA through IT, leading to achievement the strategic objectives.

This paper contributes to open the views for other research in the fields of SCM in achieving CA through IT. Consequently, the aim of this paper is to suggest a conceptual model that describes the combination of SCM by (relationship with suppliers, relationship with intermediaries and distributors, relationship with customers) on the CA by (Cost, Quality, Delivery Time, Flexibility, and Creativity commitment) with IT as a mediator variable to define the direct impact of SCM on IT in the organization being investigated. Additionally, to determine the direct impact of IT on the CA of the

organization is investigated. Finally, the study aims to recognize the indirect impact of SCM in its three dimensions combined (relationship with suppliers, relationship with intermediaries and distributors, relationship with customers) on the CA (cost, quality, delivery time, flexibility, and creativity commitment) of a company that is informed by the presence of IT as an intermediary variable.

The rest of this paper is organized as follows. Section two presents the works assessment by literature review and the subsequent section delineates the theoretical background of the research concept including supply chain concept, supply chain relationships, the concept of competitive advantage, competitive advantage factors, Information Technology (IT), and relationship among them. Section three presents the research model and hypotheses development. The methodology to perform this paper is presented in section four, while the analysis of data collected is described in section five. While the conclusion is presented in the final section.

2. Literature Review

This part gives the reader an indication of several contributions in literature related with the SC and its relationships. It also presents description of CA, and competitive advantage factor. Finally, it describes the relationship between SCM, CA, and IT related in the literature.

2.1 The Supply Chain (SC) Concept

In an organizations heavily dependent on the SC, D'Eusanio et al. (2019) noted that the SC depends on the physical actions connected to the alteration of the organization resources and the raw material movement since the initial stage to final phase, as well as actions related with information, material and financial flows for creating a decisional system that incorporate with all the procedures of gaining, production, delivery and customer services in the organization. Colin et al. (2015) explain that the proper SC has established vital for the attractiveness of organizations, since it confirms the efficiency of goods, and the good management with providers, mediators and marketplace requirements.

In fact, the organizations need to manage SC a normal phenomenon as an outcome of some intense discussions concerning the role and the intensity of using process of suppliers, distributors, and customers. In this context, Waghmare and Mehta (2014) noted that SC is a complex linkage of providers, distributors, and clients who share wisely achieved information about request, choices and performance, who identify that the success of one part of the SC means achievement for all. Verma and Singhal (2018) explain that the SC can be attained by the combined all work of several members such as providers, constructers, traders and sellers, this integration is important for the strategies to gain SC effectiveness in a flow of material and other capitals within the business; also, the combined efforts also contain management and collaboration amongst the components.

2.2 Supply chain Management (SCM)

It is essential in this context to bring some important relationships. In reality, Waghmare and Mehta (2014) noted that the SCM is a several of approaches apply to connected providers, manufacturers, warehouses and goods efficiently so that the goods are produced and disseminated in suitable quantities, to the right location based on time request, to reduce system-wide costs while meeting facility level necessities, multinationals to manage their philosophy in order to preserve this environment of globalization by apply IT. The growth of SCM is a long term trend in the organizational environment, Handoko et al. (2015) focused on SCM in external and internal part of logistic and it responsibilities.

Furthermore, Vargas et al. (2019) concluded that there is a need to evaluate two enablers of top and middle management support. Referring to the organizing experienced by the specialized institutes themselves Chen et al. (2019) comment that the acceptance of SCM explanations is essentially driven

by the incentive to develop the facility provider and guarantee all SC performance. Additionally, for most of organizations, there is a need of trying to reduce supplier fees at a time when the supplier is exerting certain pressures to obtain the highest prices for the quality levels it sets and offers (partnership). SCM plays an important role to be the interface between the organization and its relationship with suppliers, relationship with intermediaries and distributors, and relationship with costumers. Additionally, using SCM factors Handoko et al. (2015) state five key procedures in the SC which can be summarized in; buying, creating, delivery, storing and selling.

2.3 The concept of competitive advantage (CA)

It is remarkable to note that in the initial methods to business study there is an absence of a function with an emphasis on CA planning and development. Vargas et al. (2018) define that competitive CA is a contact to original marketplaces comparative to the business's main entrants, design and product growth relation and upgrading of the organization’s status comparative to its key rivals.

Furthermore, Chen et al. (2018) report that a CA is typically continued in a period of time; therefore, acquisition sustainable CA in a quickly altering organization, particularly in the internet and electronic business, develops a vital subject for all organizations. The view that sustainable CA is at the core of business which has been expressed in a variety of contexts over the years by top managers and academic literature. ALJarrah et al. (2018) examine this issue and report three basic methods to develop the CA namely: Always evolving job nature delivers the environment for originality for emerging job nature., Quickly altering for work situation by accepting alteration for work environment based on rivals, and Novelty of business phases by grows the Novelty behavior of workers for organization phases.

2.4 Competitive advantage (CA) factors

In this section the author tries to review the results of the researcher that have been conducted regarding the five competitive advantage factors are in order:

Cost: This is the ability of the company to efficiently achieve the cost of manufacture, containing several features such as overhead, portfolio and new value. The most important strategies for cost precedence are to achieve and decrease manufacture costs by standardizing and successful production processes with low error. Also, cost-effective alternate explanation to the difficult of dimensional information estimation, permitting to generate determining information that are more important in engineering of manufactured parts (Malapelle et al., 2017). Furthermore, Cicellin et al. (2019) note that the low-cost service business model characterizes an innovation that is showing excessive potentiality, since it is abstracted to include in the income calculation not only financial returns but also social results.

Quality: Organizations strive to provide quality products that other organizations cannot keep up with, quality means (the suitability of the design characteristics of the product to the employment function), or (they are appropriate for use and based on understanding customer requirements). Recently, Cao et al. (2019) explain that the business is capable to create rapid decisions and reply rapidly, the business could answer to changing customer requirements as soon as possible and decrease sequence time in all features of a organizations to deliver better worth to its customers and refining the quality of businesses processes and lead to CA. Additionally, the good quality is observed as a platform for attaining the CA such as cost, distribution, cycle time, and flexibility management gives to quality performance by the decrease in procedure alteration, which leads to less scraps and reworks (Phan et al., 2011).

Delivery time: The Delivery time is important for CA. Also, this is mostly due to greater levels of competence and effectiveness obtainable to customers, because novel technologies allow the business to recognize and observer its delivery time for products, while ensuring a constant and effective

sequence of services to its customers in order to evaluate the CA over delivery time (Annarelli et al., 2019). Additionally, Modak and Kelle (2019) noted working delivery time in the online sales channel of the SC, as one of the marketing practices, to attract the client's request and considered the part of delivery time in the performance.

Flexibility: Flexibility is the foundation for attaining organization's CA by replying quickly to variations that may happen in work design and to suit the customer's request. Furthermore, Flexibility shows the organization's capability to alteration processes to other approaches. This may mean altering process performance as well as changing the way and time operations perform. Clients essential factors to deliver four necessities include: Firstly, product flexibility, the capability of processes to transport new products. Secondly, elasticity of the mix, which means the ability of processes to produce a mix of products. Thirdly, elasticity of scale, which means the capability of procedures to alteration the level of productivity or the level of manufacture action to deliver diverse sizes of products. Finally, innovation which means examination and utilization knowledge by IT to increase the potential for flexibility in product novelty. Besides, several organizations grow more explorative product novelties in order to grow the flexibility on marketplace performance (Seo et al., 2015). Additionally, Phan et al. (2011) noted that for manufacturing organizations flexibility is documented as the core of industrial competences which includes flexibility to alteration capacity and flexibility to alteration capacity at actual minimum cost with small manufacture series time and new product growth time.

- Creativity commitment: Creativity is an innovative CA. It is the ability of an organization to continue to develop and improve production processes on existing products and / or to continue to develop and increase production processes to produce new products. Chiu and Yang (2019) note that the environmental issues can inspire the innovative procedure and enable creativity. However, the controlling impacts of creativity elements in the relationship between IT acceptance and service novelty and between IT acceptance and CA is important for all organizations (Baum & Bird, 2010).

2.5 Information Technology (IT)

Most large and medium sized manufacturing firms are increasingly being organized work by developed Information Technology. Recently, Boiko et al. (2019) acknowledge that the IT is planned to computerize and accomplish all stages of the organization's supply maintenance and control the complete product distribution in the organization. Marinagia et al. (2014) give a very clear illustration of organizations as open IT by developing new tools related to IT, global rivalry, and improved client demands to reassess how they can take benefit of IT competences to better manage their all operations of their organizations to allow information delivery through organizations part by mixing both interior and outside business operations.

The world witnessed an increase in the use of IT for creation of new ways of conducting business as well as providing different ways for companies to take advantage of them (Obeidat, 2019). Furthermore, Konovalenko and Ludwig (2019) stress that the fundamental principle of the IT allows the organizations to categorize probable procedure deviations as soon as possible and wins themselves more time for responsive countermeasures. Therefore, IT offers better flexibility in business and administration to apply the electronic business. In this context, Laudon and Laudon (2018) emphasize the importance of the IT for building and digital firm in three ways. Firstly, important business relations are digitally allowed and mediated. Secondly: the main business procedures are achieved over digital networks Finally: The main business resources are achieved digitally.

2.6 The relationship between SCM, IT, and CA

SCM in the context of the manufacturing industry is a sophisticated process. Recently, Boiko et al. (2019) explain that the SCM system permits considerably superior fulfil the request for the

organization's goods and considerably decrease the costs of logistics and buying to cover the whole cycle of buying of raw materials, manufacture and product delivery by new technology (Colin et al., 2015). Additionally, Boiko et al. (2019) suggest that the working SC helps to growth the preparation structure, improve warehouse inventory, make timely distributions, check offer to request conformity, decrease costs and, as a result, increase the business's market competitiveness. Therefore, IT tools promises to radically transform everyday notions of how organization build the relationship with providers and with clients in order to improve the CA. In this context, Colin et al. (2015) claim that the use of IT tools to coordinate with providers is important.

Additionally, Abu Zaid (2014) conducted a study to examine the direct impact of competitive priorities in institutional performance and indirect impact through SC strategy. To achieve this goal, competitive priorities were measured through four dimensions: value, distribution, flexibility and cost. The SC strategy was measured through flexible SC strategies. To attain the objective of the paper, the researcher adopted the analytical descriptive method, where a questionnaire was developed to measure the study variables, distributed to factories operating in the food industry in Jordan. The results of the study also displayed a direct impact of competitive priorities on the part of (quality, cost and delivery). Also, Yunas et al. (2016) present the new model of CA of SCM procedures in Indonesian cocoa manufacturing to provide a study on the new framework of CA and performance driven by SCM procedure and SC strategy, where one of the phenomena of the cocoa industry in Indonesia is the problem of SC length from downstream to upstream and eventually impacting CA.

Some further research has been carried out with regards to SCM in general by the IT., Han et al. (2017) also points out that, the ambidexterity of IT tools need not exist in only with single organizations but can be comprehensive to SC; and Flexible information connections amongst organizations might permit a focal organization to utilize its current cross organization functions, such as using online purchasing order and supplier management system to streamline obtaining procedures, to improve competence that lead the CA. Additionally, Cai and Yang (2014) realized that the procedure and environmental elements impact the tradeoff among the competitive priorities, such as price, value, and distribution, and use the asset frontier direct impacts on distribution and flexibility through IT. Therefore, successful SC implementation requires companies to actively share information with their partners, and to enhance information sharing, companies must invest in modern information technology (Han et al., 2017; Obeidat, & Otibi, 2015).

Under the electronic link between the company and suppliers, transport systems become warehouses instead of accumulating inventory. Electronic linking and processing will enable suppliers to transport the required materials through the SC in a timely manner, which will reflect better inventory management. Organizations should also control a connection with clients by giving them a better part in defining the environment of the goods and services they want, because the environment of the connection with the clients is in a state of change, since the long-term connection with the clients offers a CA to the organizations, in addition to retaining customers is more profitable than getting new customers. This has led organizations to realize that intense competition has made new clients difficult, and that existing customers should be seen as strategic assets that must be secure and controlled. Additionally, Waghmare, Mehta (2014) note that IT enables SCM to achieve the CA of the organization to the rest of the competitors in the marketplace. IT plays a vital role in the decision-making process and it is useful for collaboration and management within the SC. The exchange of information in a systematic language includes further actions and commitments to support the enhancement of the quality of any useful organization in light of the SC network. This is done by providing an overview and distribution of the present designs for widely used IT tools such as Enterprise resources planning, warehouse management, and controlling of transport systems and supplies.

3. Study Model and Hypotheses Development

The conceptual model was based on earlier studies in the development of the study tool and in enriching the theoretical literature presented in this study. Also, the present study was characterized by the theoretical and practical aspects of the impact of SCM on the CA through IT as an intermediate variable.

Under the theoretical framework and the contents of the Field contents, the methodological treatment of the study problem requires the design of a hypothesis model that refers to the logical relationships between the studies variables to refer to temporary solutions to answer the questions raised by the study problem. Fig. 1 illustrates the model of the study, which was drawn from administrative literature.

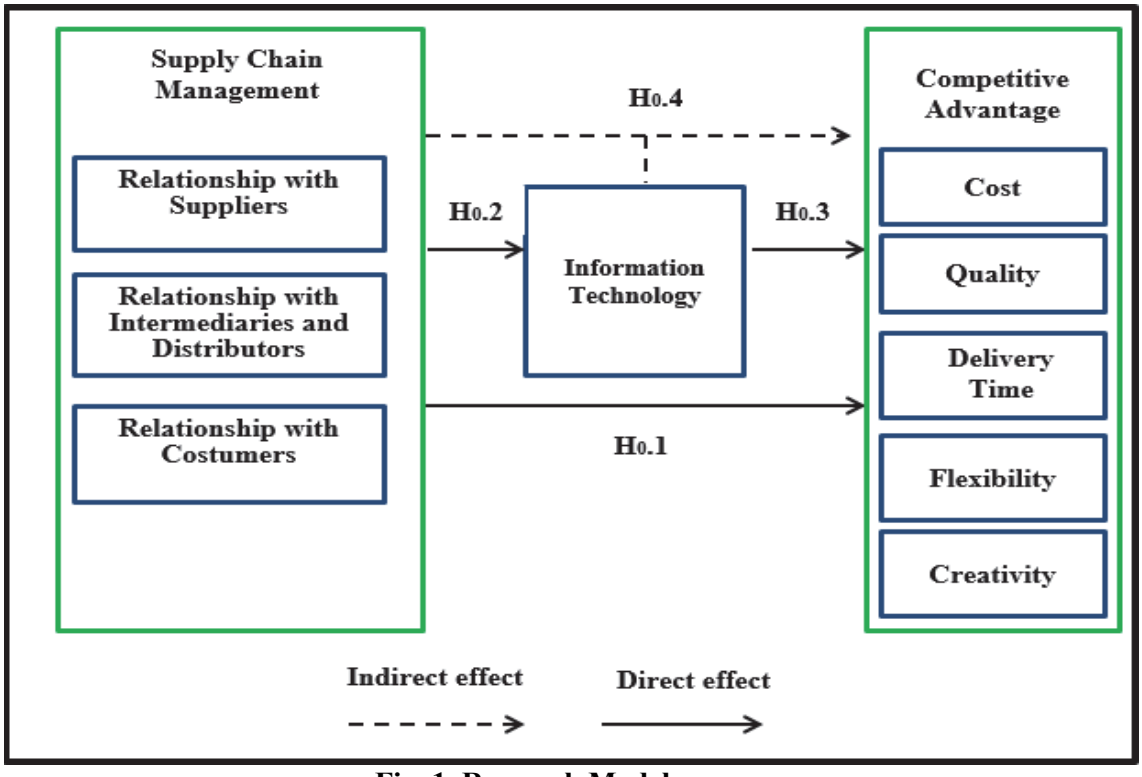

Fig. 1. Research Model

Within the research model the four essential hypotheses have been advanced as follows:

H_{01}: There is no significant statistical direct effect for the SCM in its combined dimensions (relationship with suppliers, relationship with intermediaries and distributors, relationship with customers) on CA in Halwani Industrial Company.

H_{02}: There is no significant statistical direct effect for the SCM with its combined dimensions (relationship with suppliers, relationship with intermediaries and distributors, relationship with customers) on IT in Halwani Industrial Company.

H_{03}: There is no statistically significant direct effect for IT on the CA in Halwani Industrial Company.

H_{04}: There is no statistically significant Indirect effect for the SCM in its combined dimensions (relationship with suppliers, relationship with intermediaries and distributors, relationship with customers) on the CA through IT as a mediating variable in Halwani Industrial Company.

4. Research Methodology

This section defines the procedure of the paper through which the purposes of the paper can be achieved, the methodology of the study, the sample selected and its characteristics. It also shows the steps of preparing and developing the study tool, its stability, the procedures implemented in the study, the statistical methods used in processing the data.

4.1 Research approach

The researcher relied on the descriptive-analytical approach in the study to identify the impact of SCM on the CA through IT. This approach is based on a detailed interpretation of the current situation or problem by determining its conditions, components and dimensions and describing the relations between them (Sekaran & Bougie, 2016). This approach is not limited to the process of describing the phenomenon, but includes analyzing, measuring and interpreting the data, and reaching a precise description of the phenomenon or problem in a comprehensive manner, useful in generalizing the facts or the knowledge that has been drawn. It helps to a reasonable degree of future prediction of the phenomenon, and provides solutions and proposals to address.

4.2 Population and Study Sample

The study population consists of all (500) employees in Halawani Industrial Company. Based on Sekaran and Bougie (2016), a random sample chosen consists of 250 questionnaires were distributed, 234 questionnaires were retrieved and (8) Questionnaires were excluded. The questionnaires analyzed (226) at percentage of (90%) of the distributed questionnaires.

4.3 Study Tool

The researchers developed a questionnaire as an instrument for information collection, which was developed in proportion to the variables of the study, through the study of earlier papers related to the subject of the study where the questionnaire was formed from the following topics: Topic 1: Questions related to the independent variable SCM (relationship with suppliers, relationship with intermediaries and distributors, relationship with customers). Topic 2: Questions related to the dependent variable CA (cost, quality, delivery time, flexibility, and creativity). Topic 3: Paragraphs on the medium variable (IT). The study tool was formulated in the form of a questionnaire whose final form consisted of (45) paragraphs divided into: (15) measures the dimensions of SCM, 25 items measuring the CA, and 5 paragraphs measuring the IT. Table 1 shows the distribution of the scale paragraphs as follows:

Table 1
Distribution of study tool items

Variable	Dimension	Type	Items #
SCM	Relationship with suppliers	Independent	1-5
	Relationship with intermediaries and distributors		6-10
	Relationship with customers		11-15
SCM Total Items #			1-15
CA	Cost	Dependent	16-20
	Quality		21-25
	delivery time		26-30
	Flexibility		31-35
	Creativity		36-40
Ca Total Items #			20-40
IT		Mediator	41-45
Study Tool Total Items			45

The Likert quintet and scale were adopted (ranging from 1-5) to give more flexibility to the employees in the selection, and relative importance scale was treated according to the following equation (Sekaran & Bougie, 2016):

4.4 Reliability Test

The reliability of the study tool used to measure the variables included in the questionnaire has been determined by calculating the value of the Cronbach Alpha coefficient where the result is statistically acceptable if its value is greater than 0.60 and the value is closer to 1.

The outcomes regarding the instruction (Sekaran & Bougie, 2016) show that the overall result of Cronbach was 94.4%. The reliability test of entire variable suggests are given in Table 2.

Table 2
Stability coefficients of the study tool

Variable	Dimension	Items #	Cronbach Alpha
SCM	Relationship with suppliers	5	0.740
	Relationship with intermediaries and distributors	5	0.708
	Relationship with customers	5	0.770
SCM			0.851
CA	Cost	5	0.719
	Quality	5	0.813
	Delivery time	5	0.772
	Flexibility	5	0.828
	Creativity commitment	5	0.749
CA		25	0.925
IT		5	0.790
Total index of study tool items		45	0.944

The above table shows that the Cronbach alpha ratios ranged from 70.8%-92.5% for all dimensions, they are acceptable since they are higher than the acceptable percentage of 70%.

4.5 Normal distribution test

The natural distribution test of the collected data was performed to ascertain whether the data were under natural distribution or not. One sample Kolmogorov –Smirnov (K-S) assessment, which was used to test the natural distribution of data if the number of questionnaires was greater than (50) questionnaire. A normal distribution is that the Sig value of the data is greater than 0.05 and the K-S value is less than 5 and the torsion values should be less than 1 (Hair et al., 2011). The Normal distribution test exists in Table 3.

Table 3
The normal distribution test of data

Variables	Mean	Standard deviation	Skewness	K-S	Sig
SCM	3.94	0.419	0.085	0.813	0.524
Relationship with suppliers	3.95	0.502	0.093	1.040	0.229
Relationship with intermediaries and distributors	3.84	0.503	0.113	1.253	0.087
Relationship with customers	4.04	0.542	-0.661	1.009	0.261
CA	4.05	0.402	-0.014	1.006	0.264
Cost	4.14	0.475	-0.309	0.916	0.371
Quality	4.11	0.492	-0.126	1.058	0.213
delivery time	4.07	0.482	-0.252	1.512	0.061
Flexibility	4.00	0.528	-0.062	1.291	0.072
Creativity	3.96	0.469	0.188	1.095	0.182
IT	4.03	0.532	-0.111	1.244	0.091

Based on the test data shown in Table 3 the data has normal distribution.

5. Data Analysis and result

5.1 Description of study variables

Table 4 describes the dimensions of the independent variable SCM and it shows mean and the rank of respondents' answers at independent variable SCM dimensions.

Table 4
The mean and rank Independent variable (SCM)

#	Items	Mean	Importance	rank
1	Relationship with suppliers	3.95	High	2
2	Relationship with intermediaries and distributors	3.84	High	3
3	Relationship with customers	4.04	High	1
Total			High	

The table above displays that the mean of the customer dimension reached 4.04, which reflects a high level of importance from the point of view of the respondents, then the dimension suppliers, and at last intermediaries and distributors dimension. Table 5 shows the mean, and the level of the respondents' answers at CA dimensions.

Table 5
Mean and ranks of the dependent variable (CA)

#	Items	Mean	Importance	rank
1	Cost	4.14	High	1
2	Quality	4.11	High	2
3	Delivery Time	4.07	High	3
4	Flexibility	4.00	High	4
5	Creativity Commitment	3.96	High	5
Total		4.05	High	

The above table indicates that the mean of the dimension (cost) reached (4.14), which reflects a high level of importance from the point of view of the respondents, while quality came second followed by delivery time, flexibility, and creativity commitment. Table 6 shows the mean, and the level of respondents' answers on the variable (IT), which were measured based on (5) items.

Table 6
The mean and ranks of the Mediating Variable (IT)

#	Items	mean	Importance	rank
41	The company has advanced technologies that suit the nature of the work.	4.10	High	2
42	The software used is flexible (easy to make adjustments).	3.93	High	5
43	Customer database in the company is updated.	3.93	High	4
44	Communication networks contribute to the efficient exchange of information between supply chain partners (supplier, producer, distributor, and customer).	4.12	High	1
45	The use of new means of communication (such as social media) contributes to accelerate delivery of the company's orders.	4.08	High	3
Total		4.03	High	

The above table indicates that the mean of the variable (IT) reached (4.03), which reflects the high level of importance from the point of view of the respondents, and note that item (44), which states " Communication networks contribute to the efficient exchange of information between supply chain partners (supplier, producer, distributor, and customer)" ranked first with the mean of (4.12). On the

other hand, paragraph (42,) which states "the software used is flexible (it is easy to make adjustments)" receives the lowest mean (3.93).

5.2 Hypotheses Test

This part of the study is concerned with testing the main hypotheses of the study in order to determine the effect relationship. In order to test the hypotheses that are concerned with determining the effect of more than one independent variable and a dependent variable, the most appropriate means to determine this effect are the parametric methods, which are the most appropriate for the nature of the data, and their use requires that there is no high correlation and linear interference between the independent variables. In order to ensure that the condition is met, the researchers extracted the VIF and Tolerance parameters. After the statistical analysis, Table 7 indicates that the permissible variance coefficient for the independent variables was less than 1 and larger (0.01). The values of the variance inflation coefficient were less than (5). This indicates that there is no high correlation between the independent variables. This indicates acceptance of the values and is suitable for multiple linear regression analysis (Hair et al., 2011).

Table 7
Results of the correlation strength between the independent variables

SCM	**VIF**	**Tolerance**
Relationship with suppliers	1.538	0.650
Relationship with intermediaries and distributors	1.993	0.502
Relationship with customers	1.451	0.689

5.2.1 Test results of the first main hypothesis

The first major hypothesis of the study is: "There is no statistically significant effect of SCM on its combined dimensions (relationship with suppliers, relationship with intermediaries and distributors, relationship with customers". See Table 8.

Table 8
Results of the multiple regression test of the impact of SCM on CA

SCM	St. Deviation	Beta	T	Sig.
Relationship with suppliers	0.049	0.393	6.450	*0.00
Relationship with intermediaries and distributors	0.055	0.235	3.417	*0.001
Relationship with customers	0.044	0.202	3.389	*0.001

R = 0.682 R^2 =0.465 $\hat{R}^2_{Adj.}$ = 0.457 F = 64.204 DF = 222/3 F tab. = 2.60 (0.000) H0.1 hypothesis result = Reject

Table 8 indicates the results of the multiple linear regression test, which is the effect of a set of independent variables (relationship with suppliers, relationship with intermediaries and distributors, relationship with customers) on dependent variable (CA). The table shows that there is a statistically significant effect of SCM on the CA of Halwani Industrial Company, where the level of significance is 0.00. The value ($R^2_{\mathbf{Adj}}$) of (0.457) indicates that SCM explains for 45.7% of the changes in the CA of Halwani Industrial Company and the relationship is strong between the variables since the value of (R) = 68.2%. The results of the partial analysis of this hypothesis show that all variables contributed to the impact of on CA.

Based on the above, we accept the alternative hypothesis H0.1 which states that "there is a statistically significant effect of SCM in its combined dimensions (relationship with suppliers, relationship with intermediaries and distributors, Relationship with customers) on the CA of Halwani Industrial Company."

5.2.2 Test results of the second main hypothesis

The second major hypothesis of the study is: "There is no statistically significant effect of supply chain management and its combined dimensions (relationship with suppliers, relationship with intermediaries and distributors, relationship with customers) on IT in Halawani Industrial Company". see Table 9.

Table 9
Results of the multiple regression test of SCM impact on IT

SCM	St. Deviation	Beta	T	Sig.
Relationship with suppliers	0.077	0.315	4.131	*0.00
Relationship with intermediaries and distributors	0.088	0.053	0.642	0.522
Relationship with customers	0.070	0.218	3.070	*0.002

R = 0.477 R^2 = 0.228 $\hat{R}^2_{Adj.}$ = 0.218 F = 21.850 DF = 222/3 F tab. = 2.60 Sig. = 0.00 H0.2 hypothesis result = Reject

Table 9 indicates the results of the multiple linear regression test, which has the effect of a set of independent variables (relationship with suppliers, relationship with intermediaries and distributors, relationship with customers) on one dependent variable representing (IT). The table shows that there is a statistically significant impact of SCM on IT in Halwani Industrial Company, where the significance level (0.00). The value (R^2_{Adj}) of (0.218) indicates that SCM explain for (21.8%) of the change in IT in Halwani Industrial Company and the relation between the variables is considered to be (R) = 47.7%. The results of the partial analysis of this hypothesis show that both the relationship with the suppliers and the relationship with customers have contributed to the impact on IT, which is shown by the values of (Beta) of (0.315), (0.218) (4.311), (3.07), respectively at ($\alpha \leq 0.05$), while (relationship with intermediaries and distributors) did not contribute to the effect, which is shown by the values of (Beta) and values (T) at a higher level (0.05) as shown in Table 9. Based on the above, we accept the alternative hypothesis H0.2, which states, "There is a statistically significant effect of SCM on IT in Halawani Industrial Company."

5.2.3 Test results of the third main hypothesis

According to the third major hypothesis of the study, "There is no statistically significant effect of IT on the CA of Halawani Industrial Company." See Table 10.

Table 10
Results of the simple regression test of IT impact on CA

Independent V.	Calculated T	Tabu. T	Sig.
IT	15.518	1.960	*0.00

R = 0.720 R^2 = 0.518 $\hat{R}^2_{Adj.}$ = 0.516 DF = 225 H0.3 hypothesis result = Reject

The simple linear regression test, with one independent variable IT and one dependent variable (competitive advantage), was used. The results in Table 10 indicate a statistically significant effect where the level of significance (0.00) and the value of R2Ad, amounting to (0.516) that the IT value (R^2_{Adj}) has interpreted 51.6% of the change in competitive advantage in Halawani Industrial Company. The relationship between the two variables is very strong. The value of R= 72%. Based on the above, we accept the alternative hypothesis $H_{0.3}$.

5.2.4 Test results of the fourth hypothesis

The fourth major hypothesis of the study is: "There is no statistically significant effect of SCM in its combined dimensions (relationship with suppliers, relationship with intermediaries and distributors, relationship with customers) on the CA through IT in Halawani Company Industrial".

To test the validity of the fourth hypothesis of direct and indirect effect, Path Analysis was used, using the Amos program and supported by the SPSS program, to verify the direct and indirect impact of the study variables. See Table 11.

Table 11
Track analysis results to verify the direct and indirect impact

V.	Chi^2	df	GFI (Goodness of Fit)	CFI (Comparative Fit Index)	RAMSEA (Root mean square error of approximation)	Sig
CA	12.071	3	0.997	0.990	0.027	0.000

The results of the statistical analysis in Table 11 show that the value of (Chi^2 = 12.071) is of significant where the level of significance (Sig = 0.000) is less than 0.05, and the value of Chi^2 after dividing the degree of freedom is (4.024) (GFI = 0.997), which is somewhat close to the number one. The (CFI = 0.990), which is somewhat close to the number one, and the square root index to approximate the mean error squares (RAMSEA = 0.027), which is remarkably close to zero, which supports good form approval.

Table 12
Direct and indirect effects of the fourth main hypothesis

		C.R.	Sig	Indirect impact	Sig
Relationship with suppliers → IT	0.334	4.342	0.000	0.182	0.021
Relationship with intermediaries and distributors → IT	0.057	0.646	0.518	0.031	0.290
Relationship with customers → IT	0.214	3.091	0.002	0.117	0.018
IT → CA	0.544	15.553	0.000		

As shown in Table 12, the direct impact of relationship with suppliers on IT reached (0.334), which is significant, while the direct effect of the relationship with intermediaries and distributors on IT is equal to 0.057, and the direct effect of relationship with customers on IT is equal to 0.214. On the other hand, the direct impact of IT on CA is 0.544, a significant effect indicating that IT directly affects CA. The indirect effect on the CA was (0.182) for the relationship with suppliers, while the indirect effect of the relationship with intermediaries and distributors on CA is equal to 0.031 and is insignificant. The indirect impact of the relationship with customers on CA is equal to 0.117. Since the indirect effect of both the relationship with suppliers and the relationship with customers on CA has had a significant impact, it can be concluded that IT is considered to be a partial intermediary between independents and dependent variables. See Fig. 2. Accordingly, we cannot accept the fourth hypothesis, yet accept the alternative, as reads:

There is a statistically significant effect for SCM and its combined dimensions (relationship with suppliers[SUP], relationship with intermediaries and distributors[MED], relationship including customers[CUS]) on the CA[CA] via IT[IT] into Halawani Industrial Company.

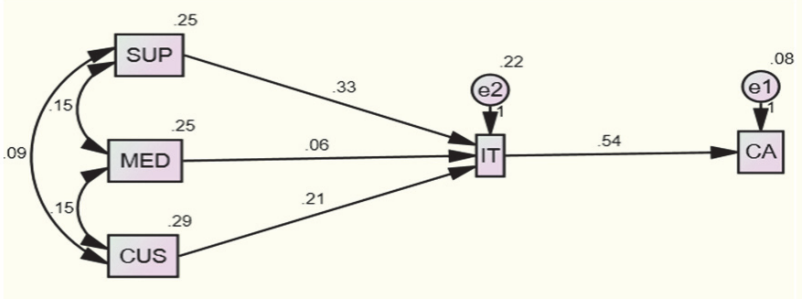

Fig. 2. Test results of the fourth main hypothesis

6. Conclusion

In this paper, we have explained that it is essential that all organizations prepare continuous surveys to recognize the changing customers' needs to satisfy them, thus increasing customer loyalty. On the other hand, it is essential that the organizations prepare continuous surveys to classify the changing needs of clients to fulfil them. Halawani co. also needs to pay attention to the management of the organization to compete on the basis of price; as the process of reducing costs leads to an increase in profit margin with the fixing of the price, when the company reduces the price lower than the prices of competitors by a simple rate while maintaining the quality of the product achieved a competitive advantage and high margin in shadow reduction costs. Also, Halawani co. should strive to reduce the defective rate in its products to raise the quality of these products and thus competes with others. Halawani company. should focus on supporting comprehensive maintenance operations to prevent breakdowns, as preventive maintenance, although high cost is better than the cost of curative maintenance, since the first work on the non-stop production line and the second can stop work and thus incurs other losses as well as the cost of maintenance. Moreover, it needs to improve the production lines used by the company to become multi-purpose to suit the rapid changes in the tastes of customers and compatible with the design of various products. While the company needs to pay attention to the formation of creative teams to develop their products; since the cooperation and coordination among members of a single team as well as synergy among the development teams adds value to the products, which earns the company a substantial ability through which to access the competitive advantage. Instead, it needs to have flexible and easy software to make adjustments. Finally, there is a need to focus on upgrading the efficiency of the IT infrastructure; it has an effective role in increasing the impact of SCM on the CA.

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