The role of the flexibility of processes in measurement the relation between the supply chain & development of a product Applied research: Al Doawra refinery

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ABSTRACT

The researchers treated the problem of processing chain efficiency in Masfa Al doawra l Baghdad, which is owned by the ministry of petroleum. In addition to the productivity flexibility of filter weakness, which leads to its weakness in reacting to the demands of the variable customers. The work research's goal was to notice the reality of the flexibility concept in creating value for the customer in the organization. And submitting a suggestion to the company about the trade-off standards between the processors, in a limit that is suitable with the new followed standards. To achieve these goals, the researchers used the measure to stagnate the pentagram, to confirm the research basics, and by using the measurements of central tendency (Arithmetic mean, standard deviation, critical ratio, variation coefficient). Depending on the spss program & AMOS program to analyze the relationship between the research variables, and the role of the medium variable among. The research reached that there is a high level of disagreement among the respondents about the supplier's after-sale services in the supply of raw materials and materials to the organization. The organization should establish policies that obligate the supplier to provide these services when needed. The organization is keen to maintain the high coordination process between it and the intermediaries and distributors to realize the importance of providing information by the parties in the right time and place and disclosure and availability when the request.

Keywords: Process flexibility, Processing chain, Product development

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1.   Introduction

Under the committee development, all the companies are seeking to increase their performances and getting a competitive advantage. The relation with the suppliers and with customers is one of the most important factors that is impacting on the performance of the companies. That's why this study aimed at recognizing the impact of suppliers' relation and customers in the companies' performance, through using the performance of the supply chain as a dependent variable & flexibility variable as a medium variable and developing the product as a followed variable. The whole data were collected for the desires of testing the study's supposition & it's model's validity by using the analysis of Structural Equation Modeling SEM and using analysis of Confirmatory Factor Analysis CFA, to test the honesty and settlement of the study by using AMOS16 program. The study reached that the relation with the suppliers & customers has an impact on all of the performance of companies and the performance of the supply chain.

1.1. Research problem

The process of making a retirement decision is represented as one of the hard decisions to be made by the processor. Because the performance of the processor is an important factor in the success or failure of any organization, and because of his impact on the whole activities of the association. And exactly, that is related to the cost of production and the product's quality level, thus it's related to the size of the demand, the organization's reputation, and the way that used to choose the processor has a big role in choosing the best among. The traditional method that is used by course filter: "Analysis method of tenders" by the committee of tenders' analysis that gets time, effort, and a lot of money, because of having a lot of faults which lead to wrong choose

(May at times be subjective at some of its aspects). So the application of the scientific methods prevents the organization from the notification of this method. The problem of the research can be concluded in the following:

1- What are the approved standards in the evaluation and testing of the processor, owned by the company (research topic)?
2- Does there use of a determined scientific style in the process of the test & evaluation?

1.2. Research goals the research is aiming to achieve the following:

Submitting a vision about the latest approved standards in the international prepared laboratory and cooperating in the scientific conversation in the basic concepts in the strategic flexibility and creating the value for the customer & the mechanisms for adoption in the organization & recognizing the role that is played by the productive flexibility and market flexibility in creating value for the customer.

1.3. Research importance

This research introduces a practical and theoretical framework for the process of submitting the processor and his international application to choose factories at present. Because he places by hands of decision-makers in the organizations a tool to choose based on scientific foundations and remote from personal impressions and prejudices and that it reduces the effort, time, and money. As well as this method eliminates the problem of most ministries in the Iraqi government and its departments, companies, branches, and often this issue is raised on the government contracts with processors or investors, namely the problem of financial and administrative corruption.

1.4. Society and research sample

Masfa Al doawra has been chosen to be a place where the research would be done, because of its importance in developing the Iraqi industrial section.

1.5. Search hypotheses

The dimensions of the first basic hypothesis affects the chains of preparation (Relation with the suppliers, relation with the intermediaries and the distributors & relation with the customers) Significant statistical effect in the flexible dimensions of the production processes. It included testing the relationship between the dimensions of the preparation chains & the flexible dimensions of the production processes in the framework of the secondary hypotheses that are emanating from it as the following:
First secondary hypothesis: Its dimensions affect the preparation chains (Relation with the suppliers, relation with the intermediaries and the distributors & relation with the customers) Moral statistical impact in the mix flexibility.Second secondary hypothesis: Its dimensions affect the preparation chains (Relation with the suppliers, relation with the intermediaries and the distributors & relation with the customers) Moral statistical impact in size flexibility.Third secondary hypothesis: Its dimensions affect the preparation chains (Relation with the suppliers, relation with the intermediaries and the distributors & relation with the customers) Moral statistical impact in delivery flexibility.

The basic second hypothesis of the research: The dimensions of the first basic hypothesis affect the chains of preparation (Relation with the suppliers, relation with the intermediaries and the distributors & relation with the customers) Significant statistical effect in the product development, emanate from it this hypothesis four secondary hypotheses as to the following:
First sub-hypothesis: Its dimensions affect the preparation chains (Relation with the suppliers, relation with the intermediaries and the distributors & relation with the customers) Moral statistical impact in the dimension of the product design.
Second sub-hypothesis: Its dimensions affect the preparation chains (Relation with the suppliers, relation with the intermediaries and the distributors & relation with the customers) Moral statistical impact in the dimension of the present product.
Third sub-hypothesis: Its dimensions affect the preparation chains (Relation with the suppliers, relation with the intermediaries and the distributors & relation with the customers) Moral statistical impact in the dimension of productive processes.

The third basic hypothesis of the research: The flexibility of the productive processes is being affected by its production's dimensions represented by the flexibility of the mix, size flexibility and delivery flexibility, moral statistical impact in product development. By the existence of chains to supply by its dimensions as a supervisor variable, branches out:

- The productive processes flexibility is impacted by its dimensions that are represented in (mix flexibility, size flexibility, and delivery flexibility) moral statistical in the product design by the existence of the supply chains' dimensions as a regulatory variable
- The productive processes flexibility is impacted by its dimensions that are represented in (mix flexibility, size flexibility, and delivery flexibility) moral statistical in improving the present product by the existence of the supply chains' dimensions as a regulatory variable
- The productive processes flexibility is impacted by its dimensions that are represented in (mix flexibility, size flexibility, and delivery flexibility) moral statistical in improving the present productive process by the existence of the supply chains' dimensions as a regulatory variable.

The fourth main hypothesis of research: The variable elasticity of production processes mediated the relation between the dimensions of the variable of the processing chains and the dimensions of the product development variable with a specific statistical significance. This hypothesis is divided into nine sub-hypotheses: First sub-hypothesis: After the flexibility of the mix mediates the relation between dimensions of preparation chains (Relation with the suppliers, relation with the intermediaries & distributors, and the relation with the customer) and the dimension of product design with a specific statistic. Second sub-hypothesis: After the flexibility of the mix mediates the relation between dimensions of preparation chains (Relation with the suppliers, relation with the intermediaries & distributors, and the relation with the customer) and the dimension of the present product improvement with specific statistical intangible.Third sub-hypothesis: After the flexibility of the mix mediates the relation between dimensions of preparation chains (Relation with the suppliers, relation with the intermediaries & distributors, and the relation with the customer) and the dimension of improvement of the production process with a specific statistical intangible.

2. Theoretical side
2.1. Supply chain

1. **Concept of Supply chain:** That term or concept appeared, to express the need of mixing the basic commercial processes by the last user and even the basic processors, who provide the goods, services, and information that add value to the customers and other stakeholders and the first who talk about the supply chain is the administrative consultant)(Keith Oliver) at the beginning of 1980th the past century, and exactly at 1982 in a meeting with the journalist (Financial Times) on 4 June 1982. After that, numerous concepts have appeared that are belonged to a lot of writers and researchers in the field of (Logistics Management). It should be noted that the suppliers are a part of the preparation chain, that participates in the forward flow & reverse flow, services, criticism, and information. It's been noted by all of A threaded chain of operations inside and through the companies that produce a service or a product for the satisfaction of the customer. A linked system that includes a lot of organizations that work together and cooperating in submitting the products and services for the latest consumer. The sequence of organizations and their facilitation, their activities that are participating in submitting the product or the service. International web of organizations & activities that is submitting the goods & services to the company.

2. **Importance of a supply chain administration:** When talking about the processing chain, we do not only mean a supply chain linked to the user supply chain, a series of information and capital, but a series of value-added and readymade materials for manufacturing, packaging, transportation and other processes to add value, through a combination of dynamic processes to gain efficiency in the company's revenue (Zhang & The flow of goods and services in the direction of the clock from the supplier to the production and then to the supply (transport and distribution) and finally to the customers and the cash flow reflect the direction of the clock from customers to and from supply and production To the supplier, As for information, it flows in both directions between each subsequent episode. And that the design of goods and services starts with the consumer's suggestions to the marketing department. Therefore, the production department and the processors are involved in the design of the goods and

services because the supplier provides the raw materials necessary to produce the product according to the required specifications.

3.   **Measurement of the performance of the supply chain:** Measurement of the performance is very important as a strategic tool, which provides methods for achieving the required goals. It has been noticed that a lot of companies are evaluating the performance on a basis of the cost and efficiency. The practical achievement of the supply chain is requiring a completion of three important sides, which are the practical communication, the fast of information movement through the supply chain, and the existence of performance measurements . The directors of the supply chain need to determine the relationship between all of:

- **Relations with suppliers:** That means the strategic company relations with the suppliers and establishing long and direct relations, and it encourages to develop the plans and resolving the problems on the level of developing the products, technology, and markets .

- **Relations with the customer:** That means a wide range of practices and techniques that are working for the administration of strategic companies with the customer, and as a result, improving the value and satisfaction of the customer. According to the analysis of elements and dimensions of supply chain management, customer relationships are the main component or component of supply chain practices in the industry.

- **Relation with the distributors and intermediaries:** The second type of the processors are the distributors, who are also known as "wholesalers" or "intermediaries", distributors are buying quantities from many manufacturers or the warehouse of goods for sale to retailers. Although its prices are higher than the prices of the two factories, they characterized by their abilities to submit small purchase demands to the retailers from a group of the two factories, because the recharge bill is lower and at the time of delivery is faster.

2.2 Product design

Product development: Product design translates customer expectations into functional and engineering requirements as well as product specifications. This corresponds to the requirements of customers even if the conditions are unfavorable and inappropriate so that the product is designed to resist changes and variations in the process of manufacturing or assembly. Design is a process that transforms creative ideas into something more realistic, which means that the creativity creates a new idea and design simulates this idea and makes it workable and must provide a design solution that will succeed in practical life.

Productive process improvement: The improvement of the process represents in a group of linked technologies that are including the interference of the processor, work teams, concurrent engineering, functional completion, administration team, and the strategy in productive process improvement. Improving the process is a systematic study of the activities and flows of each process to improve them, understand the process, and look for details. When the process is being understood, it can be improved.

Improvement of the present product

Improvement of original products, product improvement, product improvements, and new commercial standards that can be developed by the organization, through its effects in the researches & development.

2.3. Flexibility

1. Volume flexibility is gifting the organization a higher or lower energy, aimed at the response to the real demand with saving the cost, as the researchers referred to two kinds of size flexibility: (upper part flexibility, lower part flexibility), which is considered that deserves to work with a profit when the production increases more than the energy. The second one expresses the work with a profit when the production gets lower than the energy. It is also known as "A period of the degree change of volatility in the total output level that a production system can perform, without facing the process of the transfer with high faults or a big change in the results of the performance.

Mix flexibility: Expresses the ability to manufacture a lot of products with the same level of energy . Salvador linked the mix flexibility with the time and the cost through its identification: "The fast change of the mix of products that are delivered to the market with saving the effectiveness of the cost" . The mix flexibility can be measured by some products that are used by the machines and that can be submitted by the production system.

Delivery flexibility: That is the ability of the processes of changing the time of product delivery. The authors refer to that the flexibility is relating to the processes of the company, which enables it of the fast response of the customers' needs efficiently. In , the authors confirm that flexibility became the practicable gun in the committee among companies. Including the ability to manufacture a wide range of products and deliver new products on an ongoing basis as well as speed in the development of existing products. In addition to the general response to the customer's needs and desires. In addition, some authors clarified that the interior flexibility of the process includes the fast response of the required delivery time. In , They refer to flexibility means the ability of the company to fast respond to the changes, related to the sizes of the customer's demands.

Based on the foregoing; the flexibility dimension has become an important competitive advantage for any industrial company that wants the success, survival, and growth in the world of works, during the change, and the response to the customers' demands and needs of products with the lowest effort and time.

Show the results of statistical analysis of variables: This section included a detailed show of the results of the data analysis of the research, statistical description efficiency of the studied variables, and test of research hypothesis according to the Results of the statistical description under the light of measures of central tendency and dispersion: The statistical description of variables was implemented in this paragraph, sequentially according to the expressed dimensions with the following shape

Table 1. Results of the statistical descriptive analysis for the dimension of the variable of the supply chains

Dimensions	T	Statistical tools Paragraphs of Dimensions	Arithmetic mean	standard deviation	Coefficient of variation	The importance Degree
Relationship with suppliers	1	The supplier and the company cooperate in the future vision, through the obligation of the supplier with a long relationship with the company.	4.7348	1.2347	0.2607	1
	2	The continuity of the relationship between the supplier and the company and the acquisition of mutual profits and benefits between the two parties in a long time	4.5455	1.6731	0.3680	2
	3	The company exchanges with the suppliers' information transparently and clearly and the credibility of suppliers for what is supplied.	4.1894	1.5878	0.3790	3
	4	Obligations of the suppliers with the production processes and supply are fixable.	4.0606	1.6051	0.3952	4
	5	Suppliers provide post-delivery services to suit the company's requirements	3.7273	1.5036	0.4034	5
		The general average of dimension	4.2515	1.1486	0.2701	3

variable, the second mediate variable, which subjected to its third statistical dimensions, represented in the mix flexibility, size flexibility in addition to the paragraphs that express those dimensions by the following sequence:

Table 2. Results of the statistical descriptive analysis for the productive processes flexibility

Dimensions	T	Statistical tools Paragraphs of Dimensions	Arith-metic mean	standard devia-tion	Coef-ficient of var-iation	The im-portance De-gree
Relationship with suppliers	1	The production size in factory responds to the size of the happen-ing changes in the demand; increase & decrease	4.7803	1.3325	0.2787	3
	2	The factory administration relays on two processors, because of the none ability of the individual processor of providing first ma-terials with quality & quantity in a suitable time.	5.197	1.2007	0.2310	1
	3	The factory administration depends on multiple sources in the sup-ply of raw materials	5.2045	1.4342	0.2755	2
	4	The factory administration is trying to find new alternatives to obtain raw materials for its products	5.1136	1.7502	0.3210	4
	5	The factory makes changes to the product lineup in response to cus-tomer requirement.	4.6212	1.4905	0.3225	5
		The general average of dimension	4.9833	0.8834	0.1772	2

Before starting the testing procedures of the research hypotheses, it is necessary at first to verify the appropriateness of the data for the statistical test models, by knowing the natural distribution of these data as a basic requirement for the use of linear regression models for the purpose mentioned, as shown in Table (3) for the three variables dimensions studied in this research in the light of what is called Kolmogorov-Smirnov test for testing the natural distribution hypotheses as shown below :

H_o : Sample data are distributed naturally (H_O: P=0) H_1: Sample data aren't distributed naturally (H_O: $P \neq 0$).

Table 3. Natural distribution test results of the three variables dimension

Type and characteristics of the test	Kolmogorov-Smirnov		Test count
	significance of the test	signifi-cance value	
	Processing series		
Variables and their dimensions	Not significant	.200*	.050
Relationship with suppliers	Not significant	.200*	.068
Relationship with intermediaries and distrib-utors	Not significant	.200*	.058
	Productivity flexibility		
Mix flexibility	Not significant	.200*	.054
Flexible size	Not significant	.200*	.057
Flexible delivery	Not significant	.200*	.061
	Product development		
Mix flexibility	Not significant	.200*	.054
Flexible size	Not significant	.200*	.064
Flexible delivery	Not significant	.200*	.064

Table 4. Pearson correlation coefficients to the three variables dimensions: * Correlation is significant at 0.05 (2tailed)

Dimensions		Relations with suppliers	Relations with intermediaries and distributors	Relations with the customer	Mix flexibility	Size flexibility	Delivery flexibility	Product design	The current product improvement	Productivity Improvement
Relations with suppliers	Pearson correlation, teacher morale	1	.567**	.799**	.722**	.827**	.694**	.808**	.675**	.701**
			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Relations with intermediaries and distributors	Pearson correlation, teacher morale	.567**	1	.635**	.484**	.581**	.467**	.646**	.472**	.476**
		0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
Relations with the customer	Pearson correlation, teacher morale	.799**	.635**	1	.724**	.816**	.713**	.817**	.707**	.680**
		0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000

Hypotheses research test: The hypotheses were tested using multiple progressive regression models based on structural equation modeling using SPSS and AMOS programs, which is summarized in the study the direct effect for the processing chains in product development and the indirect effect of the first variable in the second one through the influence of the flexibility of production processes as an intermediate variable. Moreover, this requires the implementation of several statistical processing steps which, in turn, include several conditions that must be met in the role models of the intermediary role model which correspond to the mechanism to include the construction of research hypotheses derived from the contents of the literature related to the idea of research, and as follows in sequence:

A. To test statistically the condition of the moral relationship between the processing series and the development of the product expressed in the second hypothesis of the research, namely the hypothesis of the direct effect of the explanatory or independent variable in the variable of response or the adopted variable.

B.
To test statistically the condition of the moral relationship between the dimensions of the elasticity of production processes and product development after the inclusion of the test model for the dimensions of the variable processing series as a control variable has its expected impact in the interpretation of the variation of product development, namely the hypothesis of the effect of the variable in the variable of response to the existence of explanatory variable (independent).

Test the first main hypothesis of research: with its three sub-hypotheses:

First Hypothesis: The results of the test of this hypothesis presented in Table (5) showed a significant effect of the relationship with the suppliers whose effect was in terms of beta coefficient (.395, P = 0.000 = β) and relationship with customers, P = 0.000 = β) was one of the dimensions of the explanatory or independent variable of the processing series in the first dimension of intermediate variable reflected by the flexibility of the mix, while the results of this hypothesis did not significantly affect the distance of the relationship with the intermediaries and distributors (.000, P>0.05=β)in Mix flexibility dimension .Furthermore, the explanatory

power of the model in the light of the coefficient of determination or interpretation was (R2 = .58), which was complete in its statistical significance as well (P = 0.000). This reflects the amount of variation (58%) explained by processing series through its dimensions, the relation with suppliers and relation with the customer in particular from Mix flexibility variation under review in the context of the organization's ability to provide a mix of products to anticipate its future position and expected market paths; The rest of contrast percentage (42%) is certainly subject to the influence of other

factors not included in the test model which are outside of the current research Given the of the graph of the relationship studied at the level of the first sub-hypothesis among the sub-hypotheses arising from the first main hypothesis. The gradient paths of beta coefficients shown on single-way arrows from the dimensions of the three processing series go into mix flexibility and productivity processes

Table 5. The significance of the critical percentage

Indicators	Regression paths (Hypotheses)	β	T	SE	CR	Sig	R^2	F	P
	Relation with suppliers----> Size flexibility	.476	6.457	.073	7.437	.000			
	Relation with processors & intermediaries --> Size flexibility	.058	1.012	.065	1.017	.306	.752	129.71	.000b
	Relation with customers ----> Size flexibility	.398	5.065	.101	4.522	.000			

The higher the value of the regression, the greater the significance of the regression path. This confirms the significance of beta coefficients. Nevertheless, the effect of the dimensions of relation with the suppliers and the relation with the customers in the mix flexibility is under study.

Table 6. Results of the first sub-hypothesis from the first hypothesis the second sub-hypothesis

Indicators	Regression paths (Hypotheses)	β	t	SE	CR	Sig	R^2	F	P
	Relation with suppliers----> Mix flexibility	.395	4.122	.073	5.410	.000			
	Relation with processors and intermediaries ----> Mix flexibility	.000	-.001	.065	.000	1.000	.58	59.25	.000b
	Relation with customers ----> Mix flexibility	.409	3.997	.101	4.049	.000			

The results of the second sub-hypothesis test of the first hypothesis among the research hypotheses in the table (6) revealed the effect of the dimensions of the relation with the suppliers and the relation with the customer from the dimensions of the independent variable of the processing series. Moreover, the results indicate that the dimension of relation with the suppliers is the strongest influence in terms of beta coefficient (β =. 476, P=0.000) in the second dimension of variable mediator enshrined in size flexibility. Furthermore, the dimension of relationship with customers (β = 398, P=0.000) in the second dimension of variable mediator enshrined in size flexibility. While the continuity of the absence of a significant effect of the dimension of relationship with the mediators of the dimensions of the independent variable in the relationship with the dimension elasticity dimension goes on (β= -.058, P>0.05). In addition, the explanatory power of this model was expressed in terms of the interpretation coefficient (R2 = .752), which had a high statistical significance (P = 0.000) describing the contribution percentage of the relation with the supplier's dimension and relation with the customer (75.2%) in size flexibility variation. This means that size flexibility isn't formulated separately from processing series especially concerning the Organization's deliberate efforts to prevent its declining ability by guaranteeing flexibility of production size and maintain their core competencies in the competitive market through processes of processing series. , While the rest of the contrast percentage (24.8%) is explained by causes and other factors that do not fall within the limits of the research, and therefore were excluded from the model of this test. Table (6) Results of the second sub-hypothesis test of the first main hypothesis shows the paths of the relationship predicted in the second sub-hypothesis among the sub-hypotheses arising from the first main hypothesis, which shows the estimated values of the regression coefficients shown on the single-direction arrows from the dimensions of the three processing series towards size flexibility dimension and among its dimension's production processes flex-

ibility. That confirms the increase of the critical percentage of the two dimensions of the relation with the suppliers and the relation with the customer above the standard value of (1.96) and the details in Table (2) above indicate the significance of these two tracks. This means that the second sub-hypothesis has been confirmed in two dimensions, the second is embodied in the relationship with intermediaries and distributors.

Third Hypothesis: The results of this hypothesis test shown in Table (7) show the continuity of the moral effect of the two dimensions of the relation with the suppliers and the relation with the customer, Where the results show the value of the moral effect of the relationship with the suppliers in the light of the regression coefficients of beta 347 (β =P=0.000), followed by the most influential dimension in terms of beta coefficient relation with customers) (β=.442, P=0.003) in the dimensions of the intermediate variable represented by the flexibility of production processes. Moreover, the explanatory power of this model was expressed in terms of the interpretation coefficient (R^2=.55) Which was complete in its statistical significance as well (P = 0.000). This describes the percentage of the contribution of the dimensions mentioned (55%) in the variation of the flexibility of delivery within the flexibility of production proceQsses, which is in part to indicate the reason for the existence of the processing chain and the purpose it aspires to achieve. While the rest of the contrast percentage (24.8%) is explained by causes and other factors that do not fall within the limits of the research, and therefore were excluded from the model of this test

Table 7. Results of the sub-hypothesis test of the first main hypothesis

Indicators Regression paths (Hypotheses)	β	T	SE	CR	Sig	R^2	F	P
Relation with suppliers----> Delivery flexibility	.347	3.494	.068	5.102	.000	.55	52.353	.000[b]
Relation with processors and intermediaries ----> Delivery flexibility	-.010	-.128	.061	-.163	.897			
Relation with customers ----> Delivery flexibility	.442	4.170	.094	4.702	.000			

the regression paths in beta coefficients on the single-way arrows from the three processing series towards the flexibility of delivery from the dimensions of the flexibility of production processes. Furthermore, this confirms the significance of the critical percentage of those dimensions above the standard value of (1.96) for the dimensions of relation with the suppliers and the relation with the customers detailed In Table (7) above. Nevertheless, this provides additional support for the significance of beta coefficients for the effect of independent variable dimensions in dimensions of the flexibility of delivery. Then the third hypothesis is valid in part.

Test the second main hypothesis of research: The second main hypothesis of the research hypotheses focuses on the test of the relation between the dimensions of the processing series variable and the product development variable. (Relationship with suppliers, relations with intermediaries and distributors, relationship with customers) have a statistically significant effect on the development of the product. Four hypotheses arise from this hypothesis as follows:

First Sub-hypothesis: It is clear from Table (8) that the results of this hypothesis test are statistically significant for the three dimensions of the independent variable, namely, the supply chains, which are related with the supplier dimension (β= .4, P=0.000) which is the most influential among the rest of the dimensions of the variable supply series in the product design dimension. This is followed by the dimension of the relationship with customers(β= .387, P=0.000), which is followed by a relation with intermediaries and distributors (β= .173, P=0.002). As for the explanatory power of the test model, it reached (R^2=.75) in light of the ratio of the explanatory factor. The results show complete statistical significance with the test model (P = 0.000). These results may reflect the fact that the three dimensions affect the product design process.

Table 8. Results of the first sub-hypothesis of the second hypothesis

Indicators Regression paths (Hypotheses)	B	T	SE	CR	Sig	R^2	F	P
Relation with suppliers----> Improvement of current product	.303	2.988	.096	3.156	.003			
Relation with processors and intermediaries ----> Improvement of the present product	.008	.107	.086	.093	.914	0.53	48.779	.000[b]
Relation with customers ----> Improvement of present product	.460	4.261	.133	3.458	.000			

Designed to display the paths of product design regression gradients on the three dimensions of the processing series. Moreover, the values of the beta coefficients in this figure are shown on the one-way rectangles represented by the regression pathways from the dimensions of the independent variable towards the product design dimension.

Second Sub-hypothesis: The results of the second sub-hypothesis test of the second main hypothesis among the main research hypotheses shown in Table (9) resulted in the dimension of relation with the suppliers (β= .303, P=0.003), and the dimension of the relation with the customers(β= .46, P=0.000) in the second dimension of the adopted variable embodied by improving the current product. Furthermore, the moral effect of the relationship with intermediaries and distributors was not established. (β= .008, P>0.05).As for the explanatory power of this model in terms of the interpretation coefficient was (R2 = .53) with complete statistical significance (P = 0.000).

Table 9. Results of the second sub-hypothesis test of the second hypothesis

Indicators Regression paths (Hypotheses)	B	T	SE	CR	Sig	R^2	F	P
Relation with suppliers----> product design	.400	5.427	.063	6.349	.000	.75	129.48	.000[b]
Relation with processors and intermediaries ----> product design	.173	3.018	.056	3.089	.002			
Relation with customers ----> product design	.387	4.921	.087	4.448	.000			

After improving the current product from the dimensions of the variable, the product development appears in a graphical form on the top stocks moving from the dimensions of the independent variable towards the dimension of the improvement of the current product effect factors (beta).

Third Sub-hypothesis: The results of the third sub-hypothesis test of the second main hypothesis of the main research hypotheses in Table (10) showed the effect of the independent variable of supply series and the dimension of the relationship with the suppliers.(β= . 433, P=0.000) which is the highest effect among the rest of the dimensions and then the dimension of relationship with the customers(β= .314, P=0.003) in the third dimension of the variable adopted by improving the production process. Nevertheless, the explanatory power of this model was in terms of the interpretation coefficient (R^2=. 533), which has a high statistical significance (P = 0.000). Moreover, the percentage of the contribution of these three dimensions (53.3%) is described in variance after the improvement of the production process under consideration.

Table 10. Results of the third sub-hypothesis test of the second hypothesis

Indicators Regression paths (Hypotheses)	B	T	SE	CR	Sig	R^2	F	P
Relation with suppliers----> productive process improvement	.433	4.269	.090	4.811	.000	.533	48.459	.000[b]
Relation with processors and intermediaries ----> productive process improvement	.031	.394	.081	.382	.690			
Relation with customers ----> productive process improvement	.314	2.902	.125	2.512	.003			

After improvement of the production process, which is the third dimension of the variable adopted. They appear on the top stocks moving away from the independent variable towards the improvement of the production process (beta).

Test the third main hypothesis of the research: The third main hypothesis of the study of its sub-hypotheses was designed to test the relationship between the variable mediator "the flexibility of the production processes", and the dependent variable "The development of the product "by the existence of the independent variable supply series as a control variable in the test model for structural equation model to perform the intermediate variable test steps respectively.

The first sub-hypothesis test: The results of the second sub-hypothesis test of the third main hypothesis emerged from among the main hypotheses shown in Table (11), the effect of all the dimensions

of the intermediate variable, where the flexibility of the size dimension is the strongest effect.(β= .281, P=0.000), then the Mix flexibility dimension.(β= .164, P=0.007) and finally delivery flexibility dimension (β= .157, P=0.008) in the first dimension of the dimensions of the adopted variable embodied in product design. Moreover, the explanatory power of this model in terms of the interpretation coefficient was (R^2=.81) with complete statistical significance (P = 0.000).

Table 11. Results of the first sub-hypothesis test of the third main hypothesis

Indicators Regression paths (Hypotheses)	β	t	SE	CR	Sig	R^2	F	P
Mix flexibility ---> product design	.164	2.625	.068	2.411	.007			
size flexibility ---> product design	.281	3.385	.080	3.512	.000			
Delivery flexibility ---> product design	.157	2.610	.074	2.121	.008			
Relation with suppliers----> product design	.147	1.935	.064	2.296	.048	.81	91.41	.000[b]
Relation with processors and intermediaries ---> product design	.159	3.137	.049	3.244	.001			
Relation with customers ----> product design	.139	1.762	.086	1.616	.071			

the product design regression pathways on the flexibility of the three dimensions of production processes under the control effect of the three-dimensional supply series variable which goes toward the dimension of product design. Moreover, the beta coefficients appear at the highest stocks, confirming the three dimensions of the flexibility of the production processes as shown above in table (11).

Second Sub-Hypothesis Test: Table (12) represents the results of the test of this third main hypothesis of the research which shows that the moral effect is statistically significant to the flexibility of production processes in improving the current product dimension. Nevertheless, it has been limited to its dimension of size flexibility, which was influenced by the light of the beta regression factor (β=.251, P=0.029) and delivery flexibility. (β= .343,P=0.000). Moreover, the results of the test were not statistically significant in the effect of the mix flexibility (β= .073, P>0.05). in the dimension of improving the current product under study and research. AS for, the explanatory power of the test model, it was R^2=.63 in the light of the ratio of the interpretation factor. The results showed the complete statistical significance with the test model (P = .000), and these results may reflect the effect of the two dimensions above on improving the current product**.**

Table 12. Results of the second sub-hypothesis test of the third main hypothesis

Indicators Regression paths (Hypotheses)	B	t	SE	CR	Sig	R^2	F	P
Mix flexibility ---> Current product improvement	.073	.823	.108	.675	.399	.63	35.055	.000[b]
size flexibility ---> Current product improvement	.251	2.132	.126	1.992	.029			
Delivery flexibility ---> Current product improvement	.343	4.016	.116	2.956	.000			
Relation with suppliers---> Current product improvement	.035	.327	.101	.335	.738			
Relation with processors and intermediaries ---> Current product improvement	-.003	-.038	.077	-.039	.969			
Relation with customers --> Current product improvement	.179	1.601	.136	1.639	.101			

product improvement regression path paths on the flexibility of the three-dimensional production processes under the control effect of the supply series variable in its three dimensions as well. Moreover, the values of beta coefficients in this figure are shown on the one-way rectangles represented by the regression pathways that drop down from the dimensions of these two variables toward improving the current product. That confirms the significance of the effect of size flexibility and delivery flexibility

under consideration in improving the current product after comparing its critical ratios in the table (13) which reaches (1.992) and (2.956) for each of them respectively with the standard critical ratio (1.96). On this basis, proved the validity of the hypothesis of the third main research was approved and confirmed its logic in terms of the mix flexibility and delivery flexibility. There was no accepted statistical support at the dimension level of the mix flexibility to the variable production processes flexibility, and thus the incomplete partial acceptance of this hypothesis as well.

Sub-Hypothesis Test 3: Table (13) presents the results of the test of this hypothesis. The statistical effect of the production processes flexibility in the improvement of the production processes dimension was significant only after the mix flexibility (P = .002 = .82) and the elasticity of delivery (β = 0.033).In addition size flexibility was not yet statistically significant (P = 0.05, β = 0.05).Nevertheless, As for the explanatory power of the model, the interpretation coefficient (R2 = 6) was the complete statistical significance with the test model (P = 0.000). Moreover, These results may reflect the effect of the two dimensions above on improving productivity.

Table 13. Results of the third sub-hypothesis test of the third main hypothesis

Indicators Regression paths (Hypotheses)	β	T	SE	CR	Sig	R^2	F	P
Mix flexibility ---> Productivity Improvement	.282	3.088	.104	2.711	.002	.60	31.571	.000[b]
size flexibility ---> Productivity Improvement	.123	1.012	.122	1.008	.300			
Delivery flexibility-> Productivity Improvement	.184	2.089	.092	1.988	.033			
Relation with suppliers----->Productivity Improvement	.199	1.787	.098	1.829	.067			
Relation with processors and intermediaries ----> Productivity Improvement	.026	.349	.075	.357	.721			
Relation with customers --->Productivity Improvement	.068	.593	.132	.607	.544			

Test the fourth main hypothesis of research: The fourth main hypothesis concerns a test the intermediate role of the production processes flexibility in the relation between the variables of processing series and product development according to nine sub-hypotheses.

First Sub-hypothesis: The results of the test shown in Table (14) showed a significant effect of the relation with the suppliers. (P = 0.000), and the relation with the customer. (P = 0.000)in the dimension of mix flexibility as an intermediate variable in this adopted model, to test the first sub-hypothesis among the hypotheses of the intermediate role of production processes flexibility. As confirmed by the high critical ratio in these dimensions (CR = 5.410) and CR = 4.049) respectively compared to their standard value (1.96). As for the explanatory power of the trajectories of the effect of the derivation of the processing series in the mix flexibility, according to the ratio of the limiting factor (R2 = .58) which is able, according to the results, to explain the variance of the elasticity of the mixture by this ratio. The residual explanation ratio (R2 = .42) is attributed to other variables not included in this sample for the test. Moreover, it proved its statistical significance as well (P = 0.000), and the second path of influence in indirect impact paths, reflected by the mix flexibility in the design of the product. Nevertheless, it was also fully moral (β= .252, P=0.000). In addition to the direct effect of all the dimensions of the processing series (, β=.173,β= .301,.β= 284, P<.05), respectively, in product design dimension, The interpretation of the percentage of the contribution of these effects in the design of the product was reached through the interpretation ratio of the parameter (R2 = 78) with a high statistical significance (P = 0.000)

Table 14. Results of the first sub-hypothesis from hypothesis assumptions

Indicators Regression paths (Hypotheses)	B	SE	CR	Sig	R^2	F
Mix flexibility ---> product design	.395	.073	5.410	.000	.58	.000
size flexibility ---> product design	.000	.065	-.001	1.000		
Delivery flexibility ---> product design	.409	.101	4.049	.000		
Mix flexibility-----→product design	.252	.071	3.549	.000		
Relation with suppliers-----> product design	.301	.063	4.777	.000	0.78	
Relation with processors and intermediaries ----> product design	.173	.053	3.264	.001		
Relation with customers ----> product design	.284	.087	3.264	.000		

The critical percentages of the direct and indirect effects of the moral effects. The initial indication of the nature of this impact which the results showed is essential to be mentioned. This is done in terms of the direct and indirect moral influence at the level of moral relations described for those dimensions. Moreover, this gives an initial impression of the partial and intermediate role of the mix flexibility dimension in the effect of the dimension of the relation with the suppliers and the relation with the customer in the design of the product.

Second Sub-hypothesis: Table (15) presents the results of the second sub-hypothesis test of the hypotheses of the intermediary role the dimension of the mix flexibility between the dimensions of the variable flexibility of production processes according to to the text of this hypothesis. Moreover, it shows the effect and morale results of the relation between the dimensions of the independent variable of the processing series in their dimensions and the dimension of mix flexibility. Furthermore, the path of the second influence within indirect impact paths, which is embodied by the elasticity of the mix in the improvement of the current product (β= .190, P=0.036). In addition, the direct effect of the relation with the suppliers. (= β=227, P = 0.03) and the relationship with the customer (= β= 382, P = 0.000) without the dimension of e relation with the intermediaries and distributors of the independent variable in the dimension of the improvement of the current product. Nevertheless, as to the contribution of these effects to the interpretation of the variation in the improvement of the current product, it reached the interpretation ratio of the limiting factor (R2 = .55) with complete statistical significance (P = 0.000).

Table 15. Results of the second sub-hypothesis from hypothesis assumptions

Indicators Regression paths (Hypotheses)	B	SE	CR	Sig	R^2	F
Relation with suppliers ---> Mix Flexibility	.395	.073	5.410	.000	.58	.000
Relation with processors and intermediaries ---> Mix Flexibility	.000	.065	-.001	1.000		
Relation with customers ---> Mix Flexibility	.409	.101	4.049	.000		
Mix flexibility-----→productivity improvement	.190	.113	2.094	.036		
Relation with suppliers-----> productivity improvement	.227	.101	2.171	.030	.55	
Relation with processors and intermediaries -> productivity improvement	.008	.085	.110	.912		
Relation with customers ----> productivity improvement	.382	.139	3.434	.000		

It also confirmed the critical proportions of the test morphological pathways of influence with it two direct and indirect effects.

Third Sub-hypothesis: Table (16) presents a detailed presentation of the results of the third sub-hypothesis test of the intermediate hypotheses associated with the dimension of improvement of the production process which is the third and final dimension of the variable flexibility of production processes and as provided for in this hypothesis of content. These results have once again demonstrated the significance of the two tracks of the relation with the suppliers. (P = 0.000) = β (β = 0.000) and the relation with the customer (P = 0.000) and their moral impact on the mix flexibility dimension. While the explanatory power of the paths of the effect of these two dimensions in the mix flexibility dimension under analysis was according to the ratio of the maximum factor of determination (R^2=.58), which confirmed its complete statistical significance (P = 0.000)the mix flexibility dimension effect in improving the production process was also statistically significant. (β =342, P = 0.000).In addition to the direct effect of the dimension of one dimension of the independent variable that reflects the variable of the processing series, which is the dimension of the relationship with the suppliers (B =298, P = 0.003). improving the production process dimension. As to the extent to which these effects contribute to the interpretation of variation after improving the production process under study, in the light of the limiting factor (R^2=.58), it also reached a complete statistical significance (P = 0.000).

Table 16. Results of the Third Sub-hypothesis Test Of the hypotheses of the intermediary role.

Indicators Regression paths (Hypotheses)	β	SE	CR	Sig	R^2	F
Relation with suppliers ---> Mix flexibility	.395	.073	4.170	.000	.58	
Relation with processors and intermediaries ---> Mix flexibility	.000	.065	-.001	1.000		
Relation with customers ---> Mix flexibility	.409	.101	4.043	.000		
Mix flexibility-----→ Productivity Improvement	.342	.102	3.913	.000		.000
Relation with suppliers-----> Productivity Improvement	.298	.091	2.949	.003		
Relation with processors and intermediaries -> Productivity Improvement	.031	.076	.421	.673	.58	
Relation with customers ----> Productivity Improvement	.174	.125	1.622	.105		

The significance of the observed effects was confirmed by the critical ratios of the direct and indirect effects pathways described in this analysis, after their rise to a limit exceeding their standard or standard value as the reference value for comparison. In addition to the test results shown in Table (16), it shows the mediation of the elasticity of the mixture under consideration in the relationship between. Processing series, productivity improvement, partial mediation in the relationship between mix flexibility and productivity improvement**.**

4. Conclusion

1. The organization's keenness to have long-term strategies to maintain the relationship with the suppliers, to ensure continuity and achieve common interests between the organization on the one hand and suppliers on the other.
2. There is a high level of disagreement among the respondents about the supplier's post-sale services in the supply of materials and materials to the organization. The organization must develop policies that obligate the supplier to provide these services when needed.
3. The Organization is keen to maintain the high coordination process between it and the intermediaries and distributors to recognize the importance of providing information by the parties in the right time and place and disclosure and availability when the request.
4. The lack of agreement of the research sample on the existence of a partnership between the organization and the intermediaries and distributors of the gains and also not to participate in the face of risks, which weakens in the process of addressing the risks and crises imposed on them.
5. The channels of communication are used to inform the customer about the products of the organization as well as to know the needs and wishes of customers and their aspirations through direct and indirect contact with him.

6. A high difference in the views of the studied sample on the amount of attention to the channels of communication and exploitation and the right image to build relationships with the customer long-term goal of achieving the goal of the Organization.

7. Keeping abreast of developments in the customer level and the level of development and flexibility of production processes.

8. The flexibility of size to be independent of the processing chains, especially in relation to the organization's deliberate efforts to prevent its declining ability to ensure the flexibility of production volume and maintain its core competencies in the competitive market

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