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The Effect of Outsourcing on Product Quality Dimensions

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ABSTRACT: This study aims mainly to show whether outsourcing (manufacturing by others) affects the quality of products. It also shows the most important advantages and disadvantages of outsourcing (manufacturing by others). For this reason, the study was conducted in a number of Iraqi industrial companies. Where the study followed the descriptive analytical approach, the data related to the study was collected through a questionnaire distributed to a sample of department and division managers in those companies, in addition to the work data recorded in the records of the researched companies. For the purpose of obtaining the results, the data obtained through the SPSS program were analyzed and the results were used to determine the quality of the relationship between outsourcing (Manufacturing by others) and the dimensions of product quality in the study sample companies.

KEYWORDS: production, outsourcing, quality, product quality.

INTRODUCTION

Companies are constantly looking for new methods that help them reduce the costs of their products and quickly respond to changes, whether in the manufacturing environment or in the customers' tastes. Cooperation strategies, alliances, contracting, obtaining franchises and other strategies are among the methods used by companies to achieve this, as companies seek through It adopts these strategies to maintain its position in the market or increase the demand for its products.

Outsourcing or manufacturing by others, whether for complete products or parts of them, is an important issue that directly contributes to reducing pressure on companies by eliminating some of the expenses related to the production of products or parts agreed upon to be manufactured by others, and employing these expenses in other products. The company can also benefit from the experience, ability, skills, knowledge, and administrative systems of other companies, which may positively affect its performance. The company may also benefit from the speed provided by manufacturing by others in response to customer demand. On the other hand, there are a number of negatives that accompany the use of manufacturing by others, whether related to quality or delay in receipt.

This study attempts to determine the nature of the relationship between manufacturing by others as an independent variable and the dimensions of quality as a dependent variable through two basic hypotheses and several sub-hypotheses. To test the hypotheses of the study, the data and information necessary to test the hypotheses were collected by referring to the company's records and the field experience of working in the company to cover all aspects of the study.

THE METHODOLOGICAL FRAMEWORK OF THE STUDY

1. **Study problem**: Iraqi companies seek to compete in the local markets and markets of neighboring countries. Therefore, it is constantly working to build capabilities that differentiate it from its competitors by diversifying its products or quickly switching from one product to another. Hence, the study problem revolves around the following:

A- Does the company use the manufacturing method by others in manufacturing its products?

B-Is it possible for a company to be used for manufacturing by others to face changes in its industrial environment?

C-What is the level of the impact of dependence on manufacturing by others on the dimensions of the quality of the company's products?

2. Objective of the study: This study aims, in its theoretical and field aspects, to study the effect of outsourcing in manufacturing on the dimensions of product quality, with the aim of:

A- Studying the importance of manufacturing by others in general and the company under study in particular.

B- The relationship and impact of outsourcing manufacturing resources on the dimensions of the quality of the company's products.

3. Hypothesis of the study: The hypothesis of the study reflects the nature of the problem that the research intends to address by clarifying the relationship between the research variables and their impact on each other.

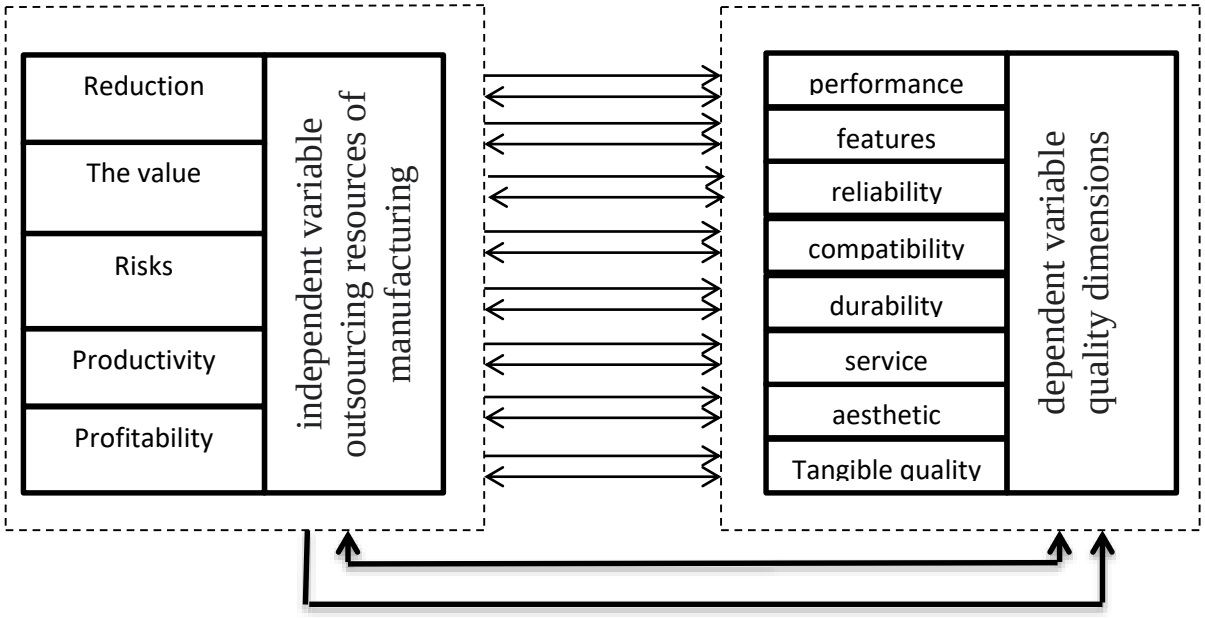

Figure No. 1. Study model

4. Study hypotheses

The study hypotheses were formulated as follows:

First: there is a significant correlation between manufacturing using the outsourcing method or manufacturing by others, and the dimensions of product quality.

Second: The second Hypothesis: There is a significant effect between manufacturing using outsourcing or manufacturing by others and the dimensions of product quality.

5. Study Methodology

This study adopted a descriptive analytical approach to study the study variables using the applied method and a field study that included the use of many statistical methods and treatments related to the subject of the study.

THE THEORETICAL SIDE

The manufacturing by others

The concept of manufacturing by others: The term outsourcing comes from the American term outsourcing, which refers to the acquisition of resources from abroad. It is also defined as an agreement whereby a company contracts a portion of its internal operations with another company. Outsourcing also refers to reliance on the outsourcing of manufacturing components and other value-added activities (Paek et al., 2019:3). (Kalia et al., 2017) also describe the transfer of enterprise operations to external service providers regardless of the service provider's location within the home country or in a foreign country. Conducted internally may be handed over to a third party or as a handover of all or part of an organizational activity to an outside supplier (Palcic, 2018:2). Outsourcing strategy is an organizational arrangement that arises when companies rely on intermediate markets to provide specialized capabilities that complement their existing capabilities and are deployed along the corporate value chain (Dani, 2017:12). Therefore, outsourcing (manufacturing by others) is seen as the act of transferring some local activities and the right to decide their activities through a contract with external suppliers, and outsourcing (manufacturing by others) is one of the modern methods of managing dealing with shortcomings and limitations in which organizations participate. (Abbasi , and other., 2018:17), Outsourcing goes beyond the use of consultants in practice, only to activities, production factors, related assets (including people, facilities, equipment, technology, and other assets), and the right to delegate decisions (Abbasi, et al., 2018:18).Outsourcing has expanded over the past two decades by purchasing only non-core components and services in which manufacturing can be outsourced to every possible activity within the value chain.) In manufacturing services, manufacturing establishments buy from the market or contract with specialized establishments for production services instead of being provided by their production

departments in the first place. Therefore, it is a form of service outsourcing in the manufacturing industry (Cao, 2019:2068).Contract manufacturers provide this service to many (or even competing) companies, based on their own or customer designs, formulas, and/or specifications. (Brehm,2020:10).

Reasons for outsourcing (manufacturing by others)

The tendency to manufacture using the outsourcing method is the act of acquiring semi-finished products, finished products, or services from an external company. The for outsourcing manufacturing include the following:

Ability to focus on core competencies and eliminate peripheral competencies. To accomplish work more efficiently, and increase the ability to face changing circumstances and demands. Lack of internal resources, and low ongoing investment in internal infrastructure. (Manjunath,2019:13),The company can focus on its core competencies and improve the quality of its products. Eliminate routine tasks that are too time-consuming, facilitate access to technology, and reduce the risk of obsolescence. Saving personnel costs, by providing an alternative to internal employees and reducing the costs of modern technology (Dani, 2017: 12). Cost reduction owing to lower manufacturing costs, lower investment, lower fixed capital, or by taking advantage of economies of scale (Kinkel, et al., 2016:4).Maintaining infrastructure and technology, reduces the need for investment in infrastructure. This reduces operational costs to a large extent. (Manjunath, 2019:13) It is also a successful policy that involves balancing the risks and benefits of obtaining external expertise in support of a set of tasks that are beyond the capabilities of internal employees or cannot be carried out cost-effectively within the organization, and through improving capabilities To meet demand and take advantage of opportunities in a competitive environment. (Dani,2017:14) ,The expected benefits of outsourcing are defined in five categories: reduced costs, increased productivity, increased profitability, improved company value, and control of risk (Festel, 2014:120).

Reasons for outsourcing (manufacturing by others)

The tendency to manufacture using the outsourcing method is the act of acquiring semi-finished products, finished products, or services from an external company. The business case for outsourcing (manufacturing by third parties) varies, but the reasons for outsourcing manufacturing often include one or more of the following:

1. Lack of internal resources.
2. Accomplishing work more effectively or efficiently and increasing flexibility to meet changing circumstances and demands.
3. Low ongoing investment in internal infrastructure impedes, access to innovation and thought leadership. (Manjunath,2019:13).
4. A company can focus on its core competencies and improve its product quality.
5. Eliminate routine tasks that are too time-consuming, facilitate access to technology, and reduce the risk of obsolescence. (Dani,2017:12).
6. Cost reduction owing to lower manufacturing costs, lower investment, lower fixed capital, or by taking advantage of economies of scale (Kinkel, et al., 2016:4).
7. Improving the quality of products or services by outsourcing to specialized vendors wish better equipment and technical expertise than the company .
8. Maintaining infrastructure and technology (Manjunath, 2019:13).
9. The expected benefits can be identified and grouped into five categories: reduced costs, increased productivity, and profitability, improved companyvalue, and risk control (Festel, 2014:120).

Outsourcing (manufacturing by third parties) is a successful policy that involves balancing the risks and benefits of obtaining external expertise in support of a set of tasks that are beyond the capabilities of internal employees or cannot be carried out cost-effectively within the organization. Organizations develop flexibility through outsourcing strategies by improving their capabilities to meet demand and taking advantage of opportunities in a competitive environment. (Dani,2017:14).

The risks of outsourcing

However, outsourcing manufacturing is not an ideal solution in all cases, This trade-off has some disadvantages such as: loss of control over product quality, difficulty in coordinating and managing external cooperation and contracts, supplier evaluation and control problems, and delivery speed problems, (Festel, 2014:120).Firms' capacity for organizational learning and the development of new technologies is impaired, and the cost savings associated with outsourcing (manufacturing by third parties) may be exaggerated. There is no indication that outsourcing (manufacturing by third parties) improves the productivity and profitability of the company (Kinkel, et al., 2016:4). In addition, the outsourcing of manufacturing involves relying on external skills and capabilities. This leads to the weakness of the company's potential in organizational learning and the development of new technologies, particularly the skills needed to develop new business and core capabilities. The trend of mass customization is forcing many companies to focus on their core competencies. Non-essential activities and functions are outsourced to

manufacturing (Dani, 2017:13), Security risks: If the product to be manufactured by others contains confidential information, the company may compromise the security of its business at risk because confidential information may leak from the seller (Manjunath,2019:14) ,The outsourcing process is seen as a reason for poor product quality or delaying delivery of the entire process (Kim., and other, 2018:1).

THE QUALITY

Definition of quality

The definition of quality varies according to the customer's view and need for the product. Quality is defined as a product's ability to meet consumer expectations. Quality is the sum of the features and characteristics of a product or service that affect its ability to meet explicit or implicit needs. Product quality has a significant impact on performance, and a higher level of product quality leads to a higher level of customer satisfaction (Chowdhury, 2017, p. 1031). Product quality is a feature that is compatible with eight basic dimensions, performance, features, compatibility, reliability, durability, serviceability, aesthetics, and quality that the consumer imagines (Jakpar, 2012, p. 223). “Improvement” in one does not mean “improvement” in the other. Quality is therefore complex and multifaceted concept. Product quality is the ability of a product to meet or exceed consumer expectations, and quality is the key to an organization's success and survival. High quality no longer distinguishes competitors. Rather, it validates a firm's competency (Hoe, et al.,2018, p. 23).

Dimensions of quality

1. **Performance:** Product performance is an essential operating characteristic. That is, performance should be in accordance with what is required of the product and what the customer expects, based on what is fixed on the product by the producer (Phong, 2017, p. 25). This allows the customer to judge a product's quality level based on the information expected in the product at different levels of evaluation, from simple product features to complex personal values (Jaskelska, 2013, p. 33).
2. **Features:** They are the additional characteristics that enhance the attractiveness of a product or service to the user (Garivn, 1984), and sometimes are those essential characteristics that go beyond the requirements and expectations of customers (Phong, 2017, p. 25), and are verified as features with their ability to change Product perception (de silva, 2020, p: 12).
3. **Reliability:** It is the chance of a product to malfunction or fail at a specific time (Garivn, 1984), and it is difficult to evaluate the reliability dimension of a product that is used immediately, For most customers, the reliability dimension can be the main factor that determines the quality of the product (Phong, 2017 ,p.25).
4. **Compatibility:** This dimension indicates the extent to which the characteristics of the product and its operation meet the established standards, so it indicates defects in the product, and the number of product units that do not meet the specifications and therefore require repair (Phong, 2017, p. 25).
5. **Durability:** Durability measures the longevity of a product (Garivn, 1984).,Durability expresses the amount of use that the consumer obtains from the product before it becomes a consumer and prefers to replace it (Phong, 2017, p. 26).
6. **Service:** This includes the speed of access to after-sales service centers, the speed and ease of repair of the product, the services provided in after-sales service centers, and its reliability (Phong, 2017, p. 26).
7. **Aesthetics:** refers to the external appearance of a product (Garivn, 1984). The evaluation of a product’s aesthetics is based on personal opinion and customer preferences, therefore, the view of the product’s aesthetics varies from one consumer to another depending on the culture, personality, and need for the product (Phong, 2017, p. 26).
8. **Tangible quality:** Consumers usually do not have complete information about the characteristics of the product, so it depends on the brand to compare it,thus, the reputation of the brand of the product is the most popular factor that affects the customer’s decision and checks the consumer’s satisfaction with the product (Phong, 2017, p.26). This dimension is, therefore, related to the brand’s reputation (de Silva, 2020, p. 12).

FIELD FRAME

Study population and sample

1- General Company for the manufacture of cars and equipment : The company was established in 2016 after merging three companies (the General Company for the Automotive Industry, the General Company for Mechanical Industries, the General Company for the manufacture of batteries) And The battery factory / Babel-1 was selected from this company as a first sample for the study, which produces different types of liquid lead-acid batteries.

2- The General Company for Construction Industry: The company was established in 1988 after merging seven facilities belonging to more than one abolished establishment. The company includes a group of brick factories distributed in central and southern

Iraq. In addition to the plastic factories, Baghdad and Maysan. The Al-Numan factory, which produces plastic piecesand tubes using injection and extrusion methods was selected from this company as a second sample for the study.

3- Al-Zawraa State Company was established in 2015 from the merger of three companies, namely (Al-Zawraa State Company, Al-Tahadi General Company, and Al-Mansour Factory), and the company specializes in engineering industries (mechanical and electrical). It produces air filters, electrical panels, generators and transformers, electromechanical equipment, medical and industrial gases, drinking water, distilled water and solar panels. The electrical panel factory was selected as the third sample for this study.

Measuring tool

A questionnaire was used to measure the study variables. The questionnaire consisted of 60 questions based on the literature review distributed over the study variables, which were applied to three factories, and the questionnaire was distributed to department managers and people officials in the three factories. As 120 questionnaires were distributed, 111 were analyzed, and nine were neglected due to deficiencies.

Description and diagnosis of the study variables

Presentation of the data obtained from the study sample regarding the study variables.,These data will be processed using descriptive measures, the arithmetic mean, which is one of the measures of central tendency, the standard deviation, which is a measure of dispersion, and the coefficient of variation.

The results of descriptive statistics for the variables and dimensions of the current study are as follows:

First: the results of manufacturing by others:

1. **Cost reduction:** This dimension consists of five field indicators. The total weighted arithmetic mean for this dimension was (3.959), while the standard deviation was (0.841) and the coefficient of variation (21.25%), and this reflects the high agreement of the study sample on this dimension, as well as the interest of companies The study sample reduced costs in order to increase profits. Paragraph (X3) obtained the highest weighted arithmetic mean (4,342), while the coefficient of variation was (14.06%), reflecting the least dispersion in the answers. Paragraph (X2) obtained the lowest weighted arithmetic mean (3.505), which is higher than the hypothetical mean (3), while the coefficient of variation was (25.49%), which indicates dispersion in the answers.

Table 1. mean, standard division and coefficient of variation for the Reducing costs dimension

	1- Reducing costs:	average	Standard deviation	coefficient of variation	rank
X1	The company constantly monitors costs related to production in order to reduce unnecessary expenses	4.414	0.653	14.80	2nd
X2	Outsourcing reduces operating costs	3.505	0.893	25.49	5th
X3	Cost is taken into account when calculating the total contract cost	4.342	0.610	14.06	1st
X4	The company is aware of the true direct and indirect costs of outsourcing	3.901	0.762	19.54	3rd
X5	Decisions to outsource whether or not start from a cost perspective	3.631	0.841	23.17	4th
	Total	3.959	0.841	21.25%	

2. **Company value:** This dimension consists of five field indicators (X6-X10), where the total weighted arithmetic mean for this dimension was (3.222), the standard deviation was (0.911) and the coefficient of variation (28.28%), which reflects the high agreement of the study sample on this dimension, as it reflects the interest of the study sample companies in improving production and working to increase performance. Paragraph (X8) obtained the highest weighted arithmetic mean (3.477), which was higher than the hypothetical mean (3), while the coefficient of variation was (21.18%), which reflects the least dispersion in the answers to this paragraph. Paragraph (X10) obtained the lowest weighted arithmetic average (2.892), which is less than the hypothetical mean (3), which indicates that the answers to this paragraph were low, while the coefficient of variation was (33.41%), which indicates a high dispersion in the answers.

The Effect of Outsourcing on Product Quality Dimensions

Table 2. mean, standard division and coefficient of variation for value of the company dimension

	value of the company	average	Standard deviation	coefficient of variation	rank
X6	Outsourcing is used to raise the level of performance	3.261	0.979	30.02	4th
X7	Outsourcing contributes to focusing on the core activities of the company	3.225	0.849	26.34	2nd
X8	The company's use of manufacturing from others leads to the company's fulfillment of its social responsibilities	3.477	0.737	21.18	1st
X9	Outsourcing is done in order to increase the company's distinction from other companies by providing high quality products	3.252	0.919	28.26	3rd
X10	Outsourcing resources of manufacturing is the best option to improve company value	2.892	0.966	33.41	5th
	Total	3.222	0.911	28.28%	

3. Risks: This dimension consists of five field indicators (X11-X15), where the total weighted arithmetic mean for this dimension was (3.155), the standard deviation was (1.017) and the coefficient of variation (32.23%), which reflects the high agreement of the study sample on this dimension. It also reflects the interest of the sample companies in avoiding risks. Paragraph (X13) obtained the highest weighted arithmetic average (3.649), which was higher than the hypothetical mean (3), while the coefficient of variation was (21.44%), reflecting the least dispersion in the answers.

Paragraph (X14) obtained the lowest weighted arithmetic average (2.676), which is less than the hypothetical mean (3), which indicates that the answers to this paragraph were low, while the coefficient of variation was (36.40%), which indicates a dispersion in the answers.

Table 3. mean, standard division and coefficient of variation for risks dimension

	3 - Risks	average	Standard deviation	coefficient of variation	rank
X11	Outsourcing led to the timely delivery of the product to the customers	3.027	0.948	31.33	3rd
X12	Outsourcing leads to less damage to goods due to less storage	2.928	0.817	27.90	2nd
X13	Outsourcing allows others to know the company's secrets	3.649	0.782	21.44	1st
X14	Outsourcing eliminates the risks of changes in the environment	2.676	0.974	36.40	5th
X15	Outsourcing leads to the risk of losing the company's core competencies	3.495	1.190	34.04	4th
	Total	3.155	1.017	32.23%	

4.Productivity: This dimension consists of five field indicators (X16-X20), where the total weighted arithmetic mean for this dimension was (3.092), the standard deviation was (0.912) and the coefficient of variation (29.48%), which reflects the high agreement of the study sample on this dimension. It also reflects the interest of the sample companies in increasing productivity in order to increase profits. Paragraph (X17) obtained the highest weighted arithmetic mean (3.180), which was higher than the hypothetical mean (3), while the coefficient of variation was (27.87%), which reflects the least dispersion in the answers.

Paragraph (X16) obtained the lowest weighted arithmetic average (3.054), which is higher than the hypothetical mean (3), while the coefficient of difference was (32.70%), which indicates the presence of dispersion in the answers.

The Effect of Outsourcing on Product Quality Dimensions

Table 4. mean, standard division and coefficient of variation for Productivity dimension

	4- Productivity	average	Standard deviation	coefficient of variation	rank
X16	Outsourcing increases productivity	3.054	0.999	32.70	5th
X17	Check outsourcing in the manufacture of products to the use of modern technology in production	3.180	0.886	27.87	1st
X18	Outsourcing enables the company to focus on improving internal organizational activities	3.108	0.878	28.23	2nd
X19	Outsourcing practices lead to continuous improvement (services provided and innovations implemented during the service production process)	3.045	0.888	29.17	3rd
X20	This practice enabled the organization to focus on its core business and thus achieve improved customer satisfaction, and to respond faster to their demands	3.072	0.912	29.68	4th
	Total	3.092	0.912	29.48%	

5.Profitability: This dimension consists of five field indicators (X21-X25), where the total weighted arithmetic mean for this dimension was (2.822), the standard deviation was (1.079) and the coefficient of variation (38.25%), which reflects the high agreement of the study sample on this dimension. This also reflects the interest of the sample companies in increasing profits. Paragraph (X22) obtained the highest weighted arithmetic average (3.072), which was higher than the hypothetical mean (3), while the coefficient of variation was (33.63%), reflecting the least dispersion in the answers.

Paragraph (X24) obtained the lowest weighted arithmetic average (2.928), which is less than the hypothetical mean (3), while the coefficient of variation was (40.86%), which indicates a dispersion in the answers.

Table 5. mean, standard division and coefficient of variation for Profitability dimension

	5- Profitability	average	Standard deviation	coefficient of variation	rank
X21	The organization's profits have increased as a result of outsourcing practices	2.820	1.146	40.63	4th
X22	Quality of working life (employee motivation level) is affected by outsourcing practices	3.072	1.033	33.63	1st
X23	Employee welfare is achieved due to the implementation of health and safety programs due to increased profits after outsourcing	2.829	0.999	35.31	2nd
X24	led sourcing Foreign Ministry to reduce wages to stop work on some production lines	2.928	1.196	40.86	5th
X25	Profits distributed to employees increased after outsourcing	2.459	0.922	37.50	3rd
	Total	2.822	1.079	38.25%	

Second: the results of product quality dimensions:

1. Performance: This dimension consists of five field indicators (Z1-Z5), where the total weighted arithmetic mean for this dimension was (4.056), the standard deviation was (0.705) and the coefficient of variation (17.38%),which reflects the high agreement of the study sample on this dimension. It also reflects the interest of the sample companies in raising their level of performance. Paragraph (Z2) obtained the highest weighted arithmetic mean (4.180), which was higher than the hypothetical mean (3), while the coefficient of variation was (14.13%), which reflects the least dispersion in the answers.

Paragraph (Z4) had the lowest weighted arithmetic mean (3.739), which was higher than the hypothetical mean (3), while the coefficient of variation was (22.15%),indicating a dispersion in the answers.

Table 6. mean, standard division and coefficient of variation for Performance dimension

	1.Performance:	average	Standard deviation	coefficient of variation	rank
Z1	The company can establish a system through which performance is measured and monitored.	4.153	0.621	14.95%	second
Z2	The company seeks to provide high performance products.	4.180	0.591	14.13%	first
Z3	The company checks its products before introducing them to the market.	4.126	0.689	16.70%	third
Z4	The company's products always meet the approval of customers.	3.739	0.828	22.15%	Fifth
Z5	The company believes that the quality of product performance is achieved by keeping pace with the product developments.	4.081	0.689	16.89%	fourth
	Total	4.056	0.705	17.38%	

2. Robustness: This dimension consists of five field indicators (Z6-Z10), where the total weighted arithmetic mean for this dimension was (4.056), the standard deviation was (0.710) and the coefficient of variation (17.48%),which reflects the high agreement of the study sample on this dimension. It also reflects the interest of the sample companies in terms of the durability of their products. Paragraph (Z6) obtained the highest weighted arithmetic mean (4,351), which was higher than the hypothetical mean (3), while the coefficient of variation was (14.42%), which reflects the least dispersion in the answers.

Paragraph (Z8) obtained the lowest weighted arithmetic mean (3.937), which was higher than the hypothetical mean (3), while the coefficient of variation was (20.5%), indicating a dispersion in the answers.

Table 7. mean, standard division and coefficient of variation for The bladder dimension

	2 - The bladder	average	Standard deviation	coefficient of variation	rank
Z6	The company uses quality raw materials to ensure a product with high durability.	4.351	0.627	14.42%	first
Z7	The company offers products that have the ability to withstand external conditions (such as transportation).	4.180	0.663	15.87%	seco nd
Z8	The company's products have a long life before being replaced.	3.937	0.789	20.05%	Fifth
Z9	The parts of the product are assembled in such a way as to give it high durability.	3.946	0.672	17.03%	third
Z10	The company's products withstand tensile and wear tests.	3.910	0.695	17.77%	fourt h
	Total				

3.Reliability: This dimension consists of five field indicators (Z11-Z15), where the total weighted arithmetic mean for this dimension was (4.020), the standard deviation was (0.719) and the coefficient of variation (17.90%), which reflects the high agreement of the study sample on this dimension. The study sample companies' interests also reflect the high reliability of their products. Paragraph (Z14) obtained the highest weighted arithmetic mean (4.117), which was higher than the hypothetical mean (3), while the coefficient of variation was (15.62%), which reflects the least dispersion in the answers.

Paragraph (Z15) obtained the lowest weighted arithmetic mean (3.775), which was higher than the hypothetical mean (3), while the coefficient of variation was (22.22%), which indicates a dispersion in the answers.

Table 8. mean, standard division and coefficient of variation for Reliability dimension

	3- Reliability	average	Standard deviation	coefficient of variation	rank
Z11	The company offers customers safe and reliable products.	4.171	0.672	16.12%	second
Z12	The company's products are distinguished by a high degree of reliability in use.	4.036	0.660	16.34%	third
Z13	The company is interested in presenting the products correctly the first time.	4.000	0.714	17.84%	fourth
Z14	The company believes in the principle that the unreliable product will be less demanded.	4.117	0.643	15.62%	first
Z15	The company's management develops its product designs based on the results of research and development.	3.775	0.839	22.22%	Fifth
	Total	4.020	0.719	17.90%	

4. Perceived quality: This dimension consists of five field indicators (Z16-Z20), where the total weighted arithmetic mean for this dimension was (3.917), the standard deviation was (0.709) and the coefficient of variation (18.09%), which reflects the high agreement of the study sample on this dimension, as it reflects the interest of the study sample companies in the aesthetics of their products. Paragraph (Z18) obtained the highest weighted arithmetic mean (4.072), which was higher than the hypothetical mean (3), while the coefficient of variation was (13.94%), which reflects the least dispersion in the answers.

Paragraph (Z19) obtained the lowest weighted arithmetic mean (3.838), which was higher than the hypothetical mean (3), while the coefficient of variation was (19.42%), which indicates a dispersion in the answers.

Table 9. mean, standard division and coefficient of variation for Perceived quality dimension

	4- Perceived quality	average	Standard deviation	coefficient of variation	rank
Z16	The company seeks through its products to raise its reputation among companies.	4.279	0.677	15.81%	second
Z17	The company has a distinctive brand that customers prefer.	3.901	0.674	17.27%	third
Z18	The company raises the slogan of improving product quality, everyone's responsibility.	4.072	0.567	13.94%	first
Z19	The company is characterized by credibility in dealing with suppliers and customers.	3.838	0.745	19.42%	Fifth
Z20	The company adopts a policy of informing the customer of the characteristics of its products and formulations before marketing them to him.	3.964	0.738	18.61%	fourth
	Total	3.917	0.709	18.09%	

5. Aesthetic: This dimension consists of five field indicators (Z21-Z25), where the total weighted arithmetic mean for this dimension was (3.917), the standard deviation was (0.709) and the coefficient of variation (18.09%), which reflects the high agreement of the study sample on this dimension. It also reflects the interest of the sample companies in the aesthetics of their products. Paragraph (Z22) obtained the highest weighted arithmetic mean (4.009), which was higher than the hypothetical mean (3), while the coefficient of variation was (14.85%), which reflects the least dispersion in the answers.

Paragraph (Z24) obtained the lowest weighted arithmetic average (3.775), which is higher than the hypothetical mean (3), while the coefficient of variation was (19.46%), which indicates the presence of dispersion in the answers.

Table 10. mean, standard division and coefficient of variation for Aesthetic dimension

	5- Aesthetic	average	Standard deviation	coefficient of variation	rank
Z21	The company relies on the product's aesthetic and tangible characteristics to meet the customer's needs and desires.	4.081	0.715	17.53%	second
Z22	The company's management is convinced that the shape and appearance of the product indicate the basic function that the product performs.	4.009	0.595	14.85%	first
Z23	The company's management seeks continuous development in the external appearance of the product, keeps pace with the aspirations of the customer, and competes with international designs.	3.901	0.726	18.60%	third
Z24	The company's product is able to capture the attention of customers and attract them.	3.775	0.735	19.46%	Fifth
Z25	The quality of raw and raw materials is evident in the appearance and quality of the product.	3.820	0.729	19.07%	fourth
	Total	3.917	0.709	18.09%	

6. Conformity: This dimension consists of five field indicators (Z26-Z30), where the total weighted arithmetic mean for this dimension was (4.083),the standard deviation was (0.685) and the coefficient of variation (16.78%) and, reflecting the high agreement of the study sample on this dimension, which also reflects the interest of the study sample companies that their products conform to the specifications specified for them. Paragraph (Z28) obtained the highest weighted arithmetic average (4.117), which is higher than the hypothetical mean (3), while the coefficient of variation was (15.62%), which reflects the least dispersion in the answers.

Paragraph (Z27) obtained a weighted arithmetic mean of (4.009), which was higher than the hypothetical mean (3), while the coefficient of variation was (18.57%), which indicates a dispersion in the answers.

Table 11. mean, standard division and coefficient of variation for Matching dimension

	6- Matching	average	Standard deviation	coefficient of variation	rank
Z26	The company seeks to produce quality products conforming to the specifications specified in advance.	4.216	0.680	16.12%	third
Z27	The company takes the necessary measures to remove the causes of non-conformity of the products with the specified specifications and to prevent its recurrence.	4.009	0.745	18.57%	Fifth
Z28	The company constantly conducts appropriate checks to verify the quality of its products.	4.117	0.643	15.62%	first
Z29	The company adopts clear policies to make the product conform to international standards, the ISO system and other quality systems.	4.117	0.657	15.96%	second
Z30	The company resorts to matching the quality of its products by comparing with other competing products.	3.955	0.679	17.18%	fourth
	Total	4.083	0.685	16.78%	

7. Safety: This dimension consists of five field indicators (Z31-Z35), where the total weighted arithmetic mean for this dimension was (4.059), the standard deviation was (0.651) and the coefficient of variation (16.05%), which reflects the high agreement of the study sample on this dimension. It also reflects the interest of the sample companies that their products enjoy safety and security. Paragraph (Z33) obtained a weighted arithmetic mean (4.090), which was higher than the hypothetical mean (3), while the coefficient of variation was (15.30%), which reflects the least dispersion in the answers.

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Paragraph (Z34) obtained a weighted arithmetic mean of (3.982), which was higher than the hypothetical mean (3), while the coefficient of variation was (17.26%),indicating a dispersion in the answers.

Table 12. mean, standard division and coefficient of variation for Safety or security dimension

	7 - Safety or security	average	Standard deviation	coefficient of variation	rank
Z31	The company's products do not do any harm when used.	4.162	0.668	16.05%	fourth
Z32	The company's raw materials are treated in a way that gives the final product high specifications and safety.	4.063	0.636	15.66%	second
Z33	The product is safe and secure for the price paid.	4.090	0.626	15.30%	first
Z34	The company seeks to design its products with high levels of safety.	3.982	0.687	17.26%	Fifth
Z35	The company's products make the customer feel reassured that he will not suffer any injury.	4.000	0.632	15.81%	third
	Total	4.059	0.651	16.05%	

Third: Testing the hypotheses of correlation

1. The results in Table (13) indicate that there is a strong positive correlation with a significant difference between manufacturing by others and the dimensions of product quality, where the correlation coefficient (0.725) reached a significant level (0.01).,There is also a positive correlation between manufacturing by others and all dimensions of product quality, so the first main hypothesis that states (there is a correlation between outsourcing resources of manufacturing and the dimensions of product quality) is accepted, as well as the first, second, third, fourth, and fifth sub-hypotheses. Table (13) shows the relationships between the study variables and their dimensions,

Table 13. The correlation between outsourcing resources of manufacturing and its dimensions, and the quality of the product and its dimensions.

Outsourcing	The performance	durability	Reliability	Perceived Quality	Aesthetic	Matching	Safety	Dimensions of product quality
Reduction	0.704**	0.756**	0.756**	0.812**	0.739**	0.776**	0.759**	0.704**
The value	0.704**	0.789**	0.819**	0.808**	0.809**	0.797**	0.793**	0.771**
Risks	0.771**	0.698**	0.724**	0.794**	0.744**	0.748**	0.757**	0.771**
Productivity	0.804**	0.816**	0.820**	0.818**	0.808**	0.808**	0.796**	0.804**
Profitability	0.777**	0.787**	0.809**	0.772**	0.783**	0.799**	0.791**	0.777**
Outsourcing	0.704**	0.756**	0.756**	0.812**	0.739**	0.776**	0.759**	0.725**

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

This paragraph focuses on validating the second hypothesis, which states that outsourcing of manufacturing sources has a significant impact on product quality.

The results of the analysis in Table (14) indicate that manufacturing by others has a significant effect on the dimensions of product quality, and this is supported by the value of (F), which, respectively (543.521, 739.913, 737.147, 1072.630, 665.889, 838.165, 751.019) is greater than its tabular value. of (3.17) at a large (0.01) level and from the value of the coefficient of determination (R2) of 0.496 for each of the product dimensions. quality), 0.572, 0.571, 0.66, 0.546, 0.602, 0.576), and follow-up coefficients (B) and (t), we find that there is a significant effect of manufacturing by others in the dimensions of product quality.

Overall, the regression model of outsourcing manufacturing resources with product quality was significant at a level of 0.01 (in terms of the value of F) computed (3067.974), which is greater than its tabular value of (3.17),which allows us to accept the second hypothesis. The value of the coefficient of determination was (R2) (0.53%), which means that the change in manufacturing by others explains the value (53%) of the change in product quality. Accordingly, the second hypothesis is accepted, which states that

there is a significant effect of manufacturing by others, a significant effect on the dimensions of product quality. Table (14) shows the results of outsourcing manufacturing resources with product quality dimensions.

Table 14 the results of outsourcing resources of manufacturing with the dimensions of product quality

Independent	Dependent	R	R Square	B	F	t	Sig.
Outsourcing	Performance	0.704**	0.496	0.590	543.521	23.314	0.000
	Durability	0.756**	0.572	0.639	739.913	27.201	0.000
	Dependency	0.756**	0.571	0.646	737.147	27.150	0.000
	Quality Perceived	0.812**	0.660	0.674	1072.630	32.751	0.000
	Aesthetic	0.739**	0.546	0.632	665.889	25.805	0.000
	Matching	0.776**	0.602	0.588	838.165	28.951	0.000
	Safety	0.759**	0.576	0.425	751.019	27.504	0.000
	Quality dimensions	0.725**	0.525	0.501	3067.974	55.389	0.000

CONCLUSION

The use of resources from outside the company or factory is one of the methods that industrial institutions resort to in order to benefit from the experiences of others in the industry, as well as to direct their internal resources (machines and , human resources) to produce other products: it is also one of the methods followed by industrial companies in order to reduce production costs and improve quality, especially if the companies that are hired are among the leading companies in their field of work.

This study attempts to highlight the relationship between outsourcing and product quality, as the results of analyzing the data obtained from the sample companies show the existence of a relationship and influence between outsourcing and the dimensions of product quality.

All the observations presented in the data analysis in this study aim to clarify the possibility of outsourcing's impact on improving product quality. The study consisted of several parts: in the first part, some aspects of knowledge related to the subject were shown, while in the second part, the data obtained from the reality of the companies' work was presented, and the relationships and influence were presented in a quantitative manner to evaluate the final results. This study provides a full explanation that can be used to make decisions related to outsourcing.

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