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IMPACT OF INTERNAL CONTROL IN REDUCING THE COSTS OF NON-CONFORMITY WITH QUALITY STANDARDS

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Abstract:

The study sheds light on internal control as an independent variable and the elements of quality costs in their dimensions (preventive costs, evaluation costs, internal failure costs, external failure costs) as a dependent change. This is to find out the impact of internal control in reducing the costs of non-conformity with quality standards in Ur General Company for Engineering Industries. In order to achieve the aim of the research, (40) questionnaires were distributed to a randomly selected sample of workers in Ur Company. Then, a descriptive-analytical method was adopted to test the research hypotheses. Likewise, the statistical package for social sciences (SPSS), including its measures (arithmetic mean, standard deviation, Spearman correlation coefficient, a Beta coefficient to measure the impact), was also adopted in the study. After the results appeared, the hypotheses tested, and the research problem interpreted, several conclusions were reached, the most important of which is. that the company suffers from inefficient use of sound accounting methods in measuring quality costs and reducing them and then weaknesses in internal control elements; in addition to the insufficient knowledge of the concept of quality costs and its components by the employees in the Accounts and Quality Departments and even senior management. Similarly, the company's members lack straightforward training programs, as the training sessions were restricted to a specific category for their promotions according to the job grading scale.

Keywords: Internal Control, Costs of Non-Conformity, Quality costs, Prevention costs, Appraisal costs, failure costs.

1. INTRODUCTION

As a result of the intensification of competition in a way that imposes on economic, production and service units, the necessity of reconsidering the mechanism of their dealing with the surrounding conditions in their environment from every side, which requires adopting new methods in dealing with the issue of quality and means of controlling it.

In addition to planning and setting standards, monitoring the achievement of standards and following up on their implementation is the task of the control activities in the economic unit. Control activities include collecting, recording, organizing, displaying, and analyzing data to diagnose deviations, treat them, and prevent future recurrence (Ulusoy& Hazır,2021). As the focus on the main activities that affect talent management in a way that ensures a systematic identification of critical jobs, and the development of individuals from the supervisory work, to facilitate filling these jobs and ensure their continued commitment to the organization and achieve sustainability and competitive advantage (Louis et al., 2020).

In the last decades of the twentieth century, modern trends appeared in administrative and accounting thought, calling for attention to quality costs, which led to the compatibility of quality with cost considerations. Therefore, reducing quality costs is one of the objectives of internal control in the organization, which requires an analysis of factors when establishing a quality cost control system to achieve an optimal balance between quality and cost, which involves a system of control located within the economic unit that aims to control costs and try to reduce them to the minimum possible (Zhang & Mu, 2013).

The issue of quality has now become the strategic goal of many organizations and a guide to the success of organizations in the competitive market locally and internationally. Therefore, quality is the first competitive advantage for industrial and service companies. The competition by organizations to produce high-quality goods that meet the customer's desires results from

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intense competition, which leads to continuous improvement of quality and attention to it. Quality costs are considered one of the modern accounting techniques that are currently focused on. The concept of quality costs has become one of the most critical indicators of impact on production costs, which is positively reflected in profitability and the organization's ability to continue and face emerging circumstances (Elsharif, 2019). In today's globally competitive business environment, reducing non-conformance costs is much better than increasing delivery, especially in a competitive market that focuses on customer orientation (Mukhopadhyay, 2004).

In light of the preceding, the study problem focuses on the fact that most economical units suffer from a lack of awareness or focus on the importance of internal control and the extent to which it is employed to reduce Quality non-conformance costs, as control is the main problem that most economical units suffer. The control process in economic units, massive ones, is still complex as it is related to the organizational structure and leadership methods and extends beyond that to plans and goals, which are the central force for them. The problem of the study tackles the issue that economic units do not define programs and plans to reduce quality costs in their control procedures. If found, they do not give it the importance it deserves. As a result, the lack of a better quality level leads to higher costs of internal and external failure on the one hand and total costs of quality on the other. For the reasons presented above, the study, principally, aims at investigating the impact of the internal control system in reducing the cost of poor quality (COPQ), specifically; prevention costs, appraisal costs, internal failure costs, and external failure costs, to improve quality of products and then to get to zero defect, besides seeking to achieve the following goals:

- Studying a concept of the internal control system, including its aims, components, and elements.
- Studying the concept of quality costs, types, and stages of development, shedding light on their traditional and contemporary perspectives.
- Analyzing the role of the internal control system in reducing the costs of non-conformity with quality standards in Ur State Company for Engineering Industries in Dhi Qar.

This study is structured into seven sections. Section 1 provides the introduction, Section 2 contains the Literature Review, the research methodology is presented in Section 3, and Section 4 provides the conceptual framework, Section 5 provides a quality cost analysis, and Section 6 and Section 7 provide Analysis of Data and Results, and Conclusion and Policy Implications, respectively.

2. LITERATURE STUDY

The study (Plunkett & Dale, 1988) discussed quality costs related to manufacturing industries. The study showed that much of the literature adopt theoretical models claiming the existence of a relationship between the main elements of quality costs and factual data. The study concluded that there is a significant difference between some models and actual data and that many models are inaccurate and misleading. There are doubts about the seriousness of the concept of the optimal level of quality corresponding to the minimum curve of the total cost of quality.

The study (Abdul-Rahman, 1995) confirms that poor quality resulting from non-conformity leads to a higher total cost. Therefore, the costs of correcting non-conformity can be increased and affect the organization's profit margin and competitiveness. The study discussed the mechanism for determining quality non-conformity information through using the quality cost matrix as a basis for continuous improvement. And the study of (Giakatis et al., 2001) stated that the costs of quality are not limited to the costs of prevention, evaluation and failure, but that there are other hidden costs, which are the costs of manufacturing and design loss, which are relatively high costs that cannot be overlooked.

A study (Mukhopadhyay, 2004) focused on the importance of estimating quality costs to diagnose and treat problems related to non-conformity with specifications and stresses that non-conformity costs can only be eliminated if they are identified and reduce non-conformity costs is much better than increasing sales volume.

While the study (Yang, 2008) focused on one of the difficulties facing industrial companies, which was the inadequacy of most cost accounting systems in handling quality costs and providing appropriate data. Due to the lack of proper methods to determine the financial consequences of poor quality associated with different quality activities.

As for the study (Shan-Shan & Jian-Xin, 2009) has developed a new model for quality cost control using fuzzy control and neural network to facilitate automatic quality cost control. A study (Zhang & Mu, 2013) suggested establishing a quality cost control system in construction institutions to achieve the best balance between the quality and cost of construction institutions. Furthermore, the study (Hemanth et al., 2020) dealt with the issue of non-conforming medical products and their effects on patient safety, and the

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study indicated the need to include a quality assurance control team and adhere to all regulations of regulatory agencies, thus providing high-quality medicines and protecting patient safety. From the above, it is clear that internal control positively impacts the elements of quality costs in industrial units. Therefore, in this study, we hypothesize the following:

H1: There is a significant correlation between the internal control system and the elements of quality costs.

H2: There is a statistically significant impact between the internal control system and the elements of quality costs.

H2a: Internal control has a positive impact on preventive costs.

H2b: internal control has a positive impact on evaluation costs.

H2c: Internal control has a positive effect in reducing the costs of internal failure.

H2d: Internal control has a positive effect in reducing the costs of external failure.

3. RESEARCH METHODOLOGY

3.1. Research Sample and Collection Method

The research community consists of all individuals working in the Ur State Company for Engineering Industries in Dhi Qar. As for the research sample, the size of (40) individuals were chosen randomly and by 20% of the employees working in the Internal Control Department and the aluminium and cable factory.

The primary data was relied upon in the study and analysis of the reality of the accounting system in Ur State Company for Engineering Industries, as it is the most appropriate and closest to achieving the research objectives. And measuring the appropriateness of the details and information provided by the accounting system regarding quality costs to demonstrate the role of the internal control system in it, as well as strengthen this by analyzing and testing the answers and opinions of the company's employees during the last quarter of the year (2021) based on the questionnaire form distributed to the target sample from The employees of the company and testing the answers of the employees on the axes of the questions of the questionnaire.

3.2. Research methods

In order to achieve the goals and verify the hypotheses, the study relies on:

- Inductive methods: To review the literature on the topic under investigation to obtain a theoretical framework supporting research ideas.
- Descriptive analytical methods: A descriptive-analytical approach has been adopted to achieve the research objectives to study the appropriateness of the internal control system in the Iraqi industrial environment and its effect in reducing the costs of non-conformity with quality standards.

4. CONCEPTUAL FRAMEWORK

4.1. The concept of internal control

The historical development of internal control as a system for individual economic units did not seem as broad as other management spheres. However, a definition for Internal Control was first introduced in 1949 by the American Institute of Certified Public Accountants (AICPA) as "a plan and other coordinated means and ways by the enterprise to keep safe its assets, check the covertness and reliability of data, to increase its effectiveness and to ensure the settled management politics" (Lakis & Giriunas, 2012). It is also known as "a process carried out by the board of directors, the administrative body, and other individuals, designed to provide reasonable assurance about the enterprise achieved goals related to operational processes, protecting assets from loss, preparing reliable reports and complying with the laws laid down by management" (Al-Samarrai, 2016).

It is clear from the definitions above that there is almost a consensus about internal control as adhering to laws and regulations set by the administration, protecting the assets of the enterprise (company), and ensuring the accuracy of accounting records, as well as achieving the goals of the enterprise in general.

4.2. Objectives of internal control

In light of the definitions above of internal control, it is blatant that the objectives to be achieved applying this concept are many and summarized as the following (Daniela & Attila, 2013):

- **Protection of company assets:** In this respect, several steps may be taken, proportional to the size of the enterprise and the social form and responsibility of those who manage the enterprise.
- **Ensuring fidelity and accuracy of accounting information:** The accuracy of information means that it should be complete and precise, that it reflects the actual condition of the company and that this information is presented in an appropriate and timely manner. So, both the management of the enterprise and the external parties depend primarily on the accounting information, even if the degree of control requires that this information be

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detailed and classified according to the responsibility centre.

- **Promote effective exploitation:** Long-term internal control objectives are designed to improve the final results of the entity. Utilizing its organization and apprehension.
- **Ensuring compliance with the company's decisions**: is intended to the methods by which companies' decisions are achieved accurately and promptly, in a way that ensures the coordination of the company's activity, and in this regard, it is necessary to include all instructions, decisions and internal regulations as well as other provisions of the company on the method, capabilities and authorized employees To follow up on their implementation.
- **Commitment to policies and laws in force**: Commitment to policies and laws in force: It is necessary to ensure that workers adhere to all established guidelines and regulations, whether internal, related to the internal system of the company, or external, associated with the surrounding environment.

5. ANALYTICAL STUDY OF QUALITY COSTS

Due to competition, significant pressures are imposed on economic units (industrial) as each tries to survive and continue by achieving specific competitive advantages. Among these advantages is the reduction of quality costs, and there are different methods and systems in this respect. One of them is the internal control system that monitors and reduces quality costs to the minimum through its various components and dimensions. Hence, quality costs will be viewed according to the following:

5.1. conception and Definition of quality costs

Quality costs are part of the total costs of the product or service produced by economic units to meet the needs and expectations of their customers, as the prevailing belief was that high quality requires high costs. Still, over time, it was discovered that the higher quality is the one that reduces its costs and then is reflected in reducing the total cost of the product. Therefore, committing to the required specifications of the product, whether by the customer or the economic unit, will reduce the costs of quality to the minimum. (Andersson & Ryfors, 2000)

5.2. Types of quality costs

Here, we focus on how to interpret quality costs from the point of view of management accounting. Economic units have discovered that they can spend between 20% and 30% of total manufacturing costs on quality-related processes such as detecting and correcting internal and external failures. The best-known framework for understanding quality costs is classified into four categories (Atkinson et al., 2012):

5.2.1.Prevention costs

They are incurred to ensure that the economic units produce the products per the quality standards, quality engineering, train employees in methods designed to maintain quality, and statistically monitor the process. Prevention costs also include the evaluation and training of suppliers to ensure their ability to provide materials free of defects, with more robust designs for products. On the other hand, (Crosson & Needles,2011) see prevention costs as costs associated with preventing defects and failures in products and services. Similarly, (Horngren et al.,2015) Define this kind of cost as the costs preventing submitting products that do not meet specifications.

5.2.2.Appraisal costs

These costs are related to examining the products to ensure that they meet the requirements of internal and external customers. The costs of examining the parts and materials purchased and the costs of quality inspection on the production line are also regarded as appraisal costs. This includes examining incoming materials, maintenance of test equipment, and mission control. (Garrison et al., 2012) show that appraisal costs incurred, sometimes called inspection costs, to identify defective products before shipping them to customers. Unfortunately, conducting evaluation activities does not prevent defects from occurring again, and most managers now realize that maintaining many inspectors is an expensive (and ineffective) approach to quality control.

5.2.3.Internal failure costs

The costs spent by the economic unit on its defective products before shipping to customers. They are also known as "costs associated with service failure before submitting them to customers. Prevention costs consist of a set of elements, which can be classified according to the following order (Janssen, 2021):

- Scrap: The costs associated with finished materials and products, and half manufactured, are defective and cannot be fixed.
- Recycling (operation): The costs of repairing non-conforming products and the required characteristics quality.
- Reconsideration: The costs involved in re-examining products that are repaired.
- Internal failure analysis: The costs related to analyzing causes of failure and then identifying

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these reasons for treating them and avoiding them in the future.

- Maintenance of faults: The costs related to the repair and control of production equipment and the removal of material that cause defective appearance in products.

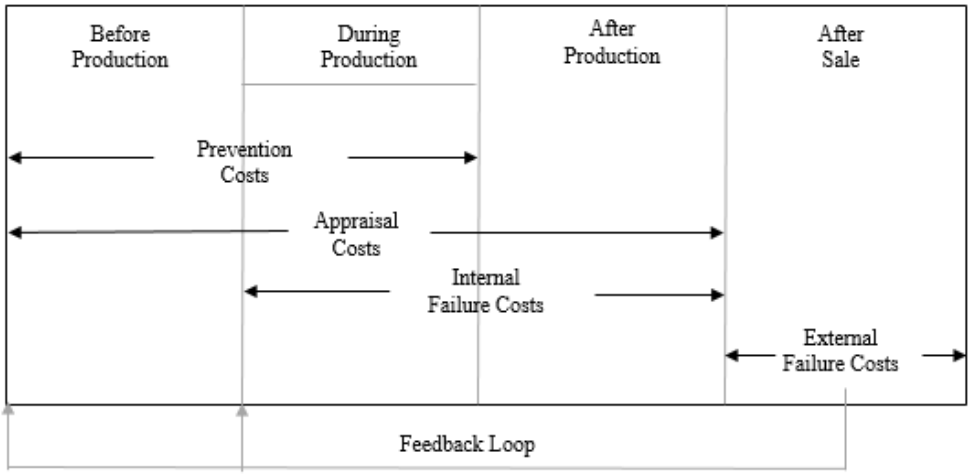
5.2.4.External failure costs

Costs that arise after the delivery of products or defective services to customers or the costs spent by the economic unit on defective products after shipment to customers. The costs of external failure consist of a set of elements, which can be classified, in the following order (Azeez et al., 2020; Klochkov& Tveryakov,2020):

- Guarantee: The costs related to the maintenance and repair of products sold to customers and returned to the economic unit for processing during the warranty period.
- Customer complaints: The costs that result from complaints by customers to decrease the level of quality.
- Sales returns: Defective or non-standard products are returned by customers to replace them with other suitable products.
- Loss of sales: Costs incurred due to loss of market share due to the provision of products of poor quality and in the form of the customer's dissatisfaction with the failure of the service or product to meet its needs and expectations.

After stating the main elements of the quality costs, it is possible to explain the stages of their emergence. It turns out that the prevention costs occur before and during production, and the appraisal costs arise before, during and after production. In addition, internal failure costs arise during and after production but before the product is delivered to the customer. At the same time, the costs of external failure occur after having the product to the customer. Together make, feedback that can provide helpful information helps the administration make decisions regarding increasing or decreasing the costs related to each quality activity. Figure No. (1) shows the stages of the emergence of quality costs, according to (Kinney & Raiborn, 2011):

Figure-1. The stages of the emergence of quality costs



Source: Kinney, Michael R., & Raiborn, Cecily A., (2011).

5.3. Methods used in the quality control process

A system for reporting quality costs is necessary if the economic unit is serious about improving and controlling quality costs. The first and simplest step in establishing such a system is to evaluate the current actual quality costs, as it can provide a detailed list of actual quality costs by category, which can, in turn, provide two important visions; the first reveals the volume of quality costs in each category, which allows managers to assess its financial impact, and the second explains the distribution of quality costs according to the category, which allows managers to assess the relative importance of each category. In addition, the financial importance of quality costs can be more easily assessed by expressing these costs as a percentage of sales (Hansen et al., 2009). There are a set of methods used in the quality control process, these are (Hammoud,2002):

- Full test method: All units are tested to ensure that they conform to specifications.
- Statistical test method: samples are randomly tested to ensure that those units produced

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conform to the pre-determined specifications; thus, the result is relatively correct compared to the full test.

- Acceptance sampling method: A sample is selected from the shipment to be tested and then accepted or rejected according to the test results, so an essential characteristic of the product has been identified, then it is checked for availability to ensure the quality of the final products.
- Production control method: it focuses on testing samples of production during the actual operation of production, which allows judging the degree of discipline of the production process by matching the product's specifications with the pre-determined specifications.
- Statistical mapping method: It is a graphical statistical tool and an essential index for determining the general level of quality. It contributes to knowing the nature of the deviation from the level of quality in any production process by defining the central line and the highest and lowest control limits.
- Computing in quality control: Computers play a fundamental role in the quality function, as they implement complex processes and calculations with great accuracy and speed, and they can be programmed to monitor production processes, test them, analyze data, write reports, or store monitoring information then Extract it.

5.4. perspectives of optimal product quality

One way to express product quality is in the percentage of products that do not meet specifications percentage of defects. In this concern, several perspectives are tackling the optimal level of product quality: (Hilton & Platt., 2019).

5.4.1.Traditional perspective

The traditional view sees that finding the optimal level of product quality balances prevention and appraisal costs on the one hand and failure costs on the other hand. Figure (2) shows this perspective, as the low percentage of defective products will increase prevention and appraisal costs while internal and external failure costs are reduced. Besides this, adding prevention, appraisal, internal and external failure costs make the "total quality costs", so the optimal level of product quality is the point that reduces the costs of total quality.

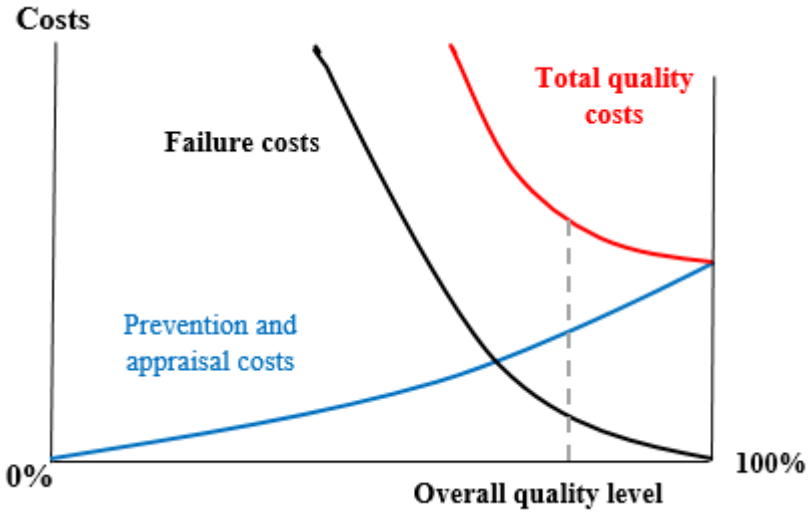

Figure-2. Traditional perspective

Source**:** Hilton, Ronald& Platt, David., (2019).

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5.4.2.Contemporary perspective

The current view of optimal product quality differs from the traditional one: if both the apparent and hidden quality costs are considered, any deviation from the target specifications of the product leads to an increase in the costs of quality. In light of this perspective, as shown in Figure (3), the optimal level of product quality occurs at zero defect level. The explicit and implicit costs of internal and external failure increase as a percentage of the increase in defective products, as the explicit and implicit costs of prevention and appraisal increase slightly and then decrease with an increasing percentage of defects. The most crucial point is that the total costs of quality have decreased to the zero-defect level (Hilton & Platt., 2019). The level of zero defects also means that the level of product quality is 100%, and this occurs when the economic unit focuses its efforts on the costs of prevention and appraisal so that failure can be minimized, or at least discovering any defects in the products before they are delivered to the customer. It is also noted that the more the costs of failure decreased, the greater the focus of the economic unit's effort on prevention activities compared to appraisal ones because the appraisal only reveals defects, while the prevention eliminates them (Jasim, 2008).

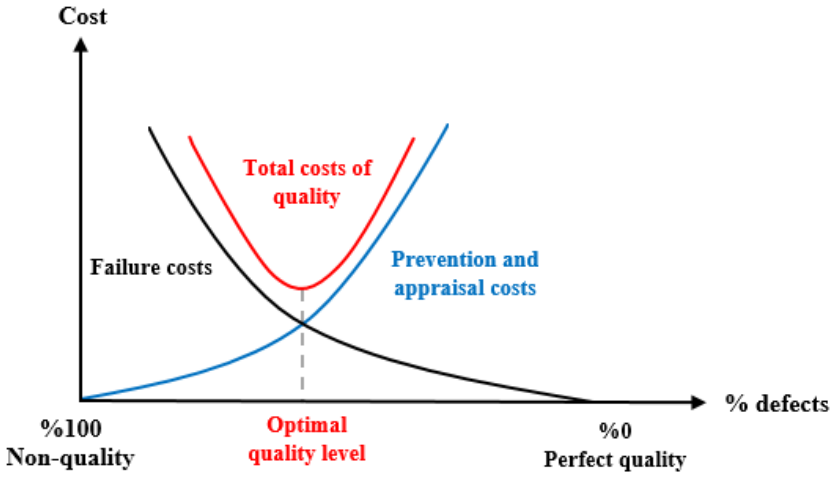

Figure-3. Contemporary perspective

Source**:** Jassem, Raghad Hashem, (2008).

It is clear from the above that the modern model indicates that deviation from the required specifications increases the costs of total quality; the more defective units increase, the more explicit and implicit apparent costs increase too, and vice versa, when the defective units decrease, the quality costs are at their lowest level, because the zero-defect takes into account both explicit and implicit costs.

6. DATA ANALYSIS AND RESULTS

6.1. Sample responses analysis related to internal control of the independent variable (X)

Data analysis was carried out by the SPSS program that shows: ratios, repetitions, arithmetic mean, and standard deviation.

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Table-7. Frequency distributions, arithmetic mean, and standard deviation
(R: Ratio – F: Frequency)

Variables	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Arithmetic Mean	Standard Deviation
	R	F	R	F	R	F	R	F	R	F		
X1	0.05	2	0.05	1	0.15	6	0.275	11	0.5	20	4.53	0.784
X2	0.025	1	0.025	1	0.175	7	0.3	12	0.475	19	4.50	0.751
X3	0.05	2	0.05	5	0.15	6	0.3	12	0.375	15	4.33	1.023
X4	0.1	4	0.1	2	0.05	2	0.225	9	0.575	23	4.33	1.071
X5	0.1	4	0.1	2	0.025	1	0.225	9	0.6	24	4.28	0.987
X6	0.025	1	0.025	6	0.2	8	0.275	11	0.35	14	4.08	1.118
X7	0.125	5	0.125	4	0.275	11	0.2	8	0.3	12	3.03	0.694

Note: Based on the results shown in Table 1, it is clear that:

The arithmetic mean for the question, X1 (do you think that activating the internal control system is necessary to reduce the costs of non-conformity with quality standards) was 4.53, and the standard deviation was 0.784. When comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is greater than the hypothetical mean. This indicates an agreement with the previous question. The arithmetic mean for the question, X2 (there are clear and specific instructions for internal control in the company) was 4.50 while the standard deviation was 0.751. When comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is greater than the hypothetical one, indicating agreement with the question above. The arithmetic mean for the question, X3 (the company's management is serious in facilitating internal control tasks) was 4.33, and the standard deviation was 1.023. Therefore, when comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is greater than the hypothetical one, indicating an agreement with the question above. The arithmetic mean for the question, X4 (do you think that the financial reports are subject to control before approval) was 4.33 and the standard deviation for the same question was 1.071. Therefore, when comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is greater than the hypothetical one, which indicates agreement with the question above. The arithmetic mean for the question, X5 (do you think that the control staff must be specialists in the accounting field) was 4.33 and the standard deviation was 0.987. When comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is greater than the hypothetical one. This indicates an agreement with the question above. The arithmetic mean for the question, X6 (do you think that the treatment of the previous errors is taken into consideration) was 4.08 and the standard deviation was 1.118. Therefore, when comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is greater than the hypothetical one, indicating an agreement with the question above.The arithmetic mean of the question, X7 (the company's control system in force achieves the desired goals) was 3.8, and the standard deviation was 0.694. When comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is equal to the hypothetical one, which indicates disagreement with the question above.

6.2. Sample responses analysis related to COPQ variable (Y)

6.2.1.Analysis of sample responses related to prevention costs (Y1)

Table-1. Frequency distributions, arithmetic mean, and standard deviation for prevention costs

Variables	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Arithmetic Mean	Standard Deviation

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	R	F	R	F	R	F	R	F	R	F		
Y11	0.025	1	0.05	2	0.225	9	0.225	9	0.475	19	4.25	1.032
Y12	0.025	2	0.05	3	0.15	6	0.325	13	0.4	16	4.05	1.176
Y13	0.05	2	0.05	2	0.05	8	0.175	7	0.525	21	4.05	1.061

Note: Based on the results shown in Table 2, it is clear that:

The arithmetic mean for the question, Y11 (the company gives importance to planning and improving prevention costs) was 4.25, and the standard deviation was 1.032. When comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is greater than the hypothetical one, indicating an agreement with the question above. The arithmetic mean for the question, Y12 (the company is interested in studying and analyzing reports on prevention costs) was 4.05, and the standard deviation was 1.176. When comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is greater than the hypothetical one, indicating an agreement with the question above. The arithmetic mean of the question, Y13 (the company pays attention to the costs of maintenance and calibration of control devices (measurement and testing) periodically to maintain its accuracy) was 4.05, and the standard deviation was 1.061 when comparing the calculated mean with the hypothetical mean whose value is 3, we find that the calculated mean is greater than the hypothetical one, this indicates an agreement with the question above.

6.2.2.Analysis of sample responses related to prevention costs (Y2)

Table-3. Frequency distributions, arithmetic mean, and standard deviation for appraisal costs

Variables	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Arithmetic Mean	Standard Deviation
	R	F	R	F	R	F	R	F	R	F		
Y21	0.1	4	0.175	7	0.175	7	0.225	9	0.325	13	4.18	1.152
Y22	0.1	4	0.175	7	0.2	8	0.25	10	0.275	11	4.30	1.018
Y23	0.075	3	0.1	4	0.2	8	0.175	7	0.45	18	3.05	1.176

Note: Based on the results shown in Table 3, it is clear that:

The arithmetic mean for the question, Y21 (the company is interested in examining and testing the raw materials involved in the production process to ensure their conformity with the specifications) was 4.18, and the standard deviation was 1.152. When comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is greater than the hypothetical one; this indicates an agreement with the question above. The arithmetic mean for the question, Y22 (the company checks and tests the products at the end of the production process) was 4.30, and the standard deviation was 1.018 when comparing the calculated mean with the hypothetical mean whose value is 3, we find that the calculated mean is greater than the hypothetical one, this indicates an agreement with the question above. The arithmetic mean for the question, Y23 (the company works to carry out the necessary maintenance for quality equipment and production lines continuously to reduce damage cases) was 3.05, and the standard deviation was1.176. Compared with the hypothetical mean, whose value is 3, the calculated mean is equal to the hypothetical one, which indicates disagreement with the question above.

6.2.3.Analysis of sample responses related to internal failure costs (Y3)

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Table-4. Frequency distributions, arithmetic mean, and standard deviation for internal failure costs

Variables	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Arithmetic Mean	Standard Deviation
	R	F	R	F	R	F	R	F	R	F		
Y31	0.05	2	0.075	3	0.15	6	0.2	8	0.525	21	4.15	1.051
Y32	0.05	2	0.075	3	0.15	6	0.325	13	0.4	16	4.05	1.197
Y33	0.1	4	0.2	8	0.025	1	0.2	8	0.475	19	4.28	1.291

Note: Based on the results shown in Table 4, it is clear that:

The arithmetic mean for the question, Y31 (the company estimates the number of defective and recycled units) was 4.15, and the standard deviation was 1.051. Therefore, when comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is greater than the hypothetical one, indicating agreement with the question above. The arithmetic mean of the question, Y32 (the company works to estimate the cost of wasted materials the cost of wastage) was 4.05, and the standard deviation was 1.197. Therefore, when comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is greater than the hypothetical one; this indicates agreement with the question above. The arithmetic mean of the question, Y33 (the company specifies and analyzes the reasons leading to the production of poor products) was 4.28 and the standard deviation was 1.291; when compared with the hypothetical mean whose value is 3, we find that the calculated mean is more significant to the hypothetical one and this indicates an agreement with the question above.

6.2.4. Analysis of sample responses related to external failure costs (Y4)

Table-5. Frequency distributions, arithmetic mean, and standard deviation for external failure costs

Variables	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		Arithmetic Mean	Standard Deviation
	R	F	R	F	R	F	R	F	R	F		
Y41	0.125	5	0.05	2	0.125	5	0.325	13	0.375	15	3.98	1.209
Y42	0.1	4	0.025	1	0.075	3	0.25	10	0.55	22	3.85	1.350
Y43	0.125	5	0.1	4	0.2	8	0.275	11	0.3	12	4.03	1.310

Note: Based on the results shown in Table 5, it is clear that:

The arithmetic mean for the question, Y41 (the company bears the costs of complaints due to defects in the products sold) was 3.98, and the standard deviation was 1.209. Therefore, when comparing the calculated mean with the hypothetical mean, whose value is 3, the calculated mean is greater than the hypothetical one, which refers to an agreement with the question above. The arithmetic mean for the question, Y42 (the company processes defective products upon receipt by customers due to defects in them) was 3.85, and the standard deviation was 1.350. When comparing the calculated mean with the hypothetical mean, whose value is 3, we find that the calculated mean is greater than the hypothetical one. This indicates an agreement with the question above. The arithmetic mean of the question, Y43 (the company bears all costs incurred after shipping the defective products to the dealers) was 4.03 and the standard deviation 1.310, and when compared with the hypothetical mean whose value is 3, we find that the calculated mean is equal to the hypothetical one and this indicates an agreement with the question above.

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6.3.Testing the study hypotheses

6.3.1.testing the first hypothesis

Table (6) Spearman's correlation coefficient

#		X	Y
X	Correiation Coefficient	1.000	0.609 000
	Sig. (2-tailed)		
	N	40	40
Y	Correiation Coefficient	0.609 000	1.000
	Sig. (2-tailed)		
	N	40	40

Based on the results of Table 6 It becomes clear that the value of Spearman's correlation coefficient is 0.60, meaning that there is a solid direct and positive correlation between the independent variable (internal control) and the dependent variable (quality costs). This result is consistent with related studies by Yang (2008); Zhang& mu, (2013); Hemanth et al. (2020) and this exactly proves the validity of hypothesis H1.

6.3.2.Testing the second hypothesis

Table-7. Beta Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig
		B	Std.Error	Beta		
1	(Constant)	2.124	.447		4.756	.000
	Y1	.562	.173	.562	1.322	.002
	Y2	.621	.214	.875	2.903	.006
	Y3	-.123	.167	-.196	-4.732	.009
	Y4	-.313	.108	-.022	-2.118	.007
Independent Variable: X						

It is clear from Table 7 that the value of the non-standard Peta coefficient for the variable Y1 represented by the prevention costs is 0.562, which means that any increase by one unit in the variable X with the stability of the variables Y2, Y3, Y4. leads to an increase In the variable Y1, the calculated value of T was 0.3221, which indicates the significance of the non-standard Peta coefficient at the level of significance 0,002. While we find that the value of the Peta parameter of the variable Y2 represented by the evaluation costs is 0.621, this means that any increase by one unit in the variable X with the stability of the variables Y1, Y3, Y4 leads to an increase in the variable Y2. The value was calculated T is 0.9032, which indicates the significance of the non-standard beta coefficient at the level of significance 0,006. Whereas the value of the beta coefficient of the variable Y3 represented by the costs of internal failure is -0.123, this means that any increase by one unit in the variable X with the stability of the variables Y1, Y2, Y4 leads to a decrease in the variable Y3 The calculated value of T was -4.732, which indicates the significance of the non-standard beta coefficient at the level of significance 0,009. While we find that the value of the Peta parameter of the variable Y4 represented by the costs of external failure is -0.313, this means that any increase by one unit in the variable X with the stability of the variables Y1, Y2, Y3 leads to a decrease in the

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variable Y4. The calculated value of T was -2.118, which indicates the significance of the non-standard beta coefficient at the level of significance 0.007. These results are consistent with related studies by Abdul-Rahman (1995); Giakatis et al. (2001); Mukhopadhyay (2004) and supports hypotheses H2, H2a, H2b, H2c, H2d.

7. CONCLUSION AND POLICY IMPLICATIONS

The study results showed that the components of internal control are preventive measures, which positively impact the elements of quality costs preventive, evaluation, internal and external failure in industrial units. The results also indicate the importance of developing appropriate control plans and programs that reduce poor quality costs and offer zero defect products. Finally, the results showed that the high costs of internal and external failure are due to the outdated control procedures on quality costs, the failure to evaluate and develop them continuously and to ensure that the right thing is done from the first moment.

In this study, the results showed the need to improve control procedures, benefit from previous studies and international experiences, enhance workers' capabilities, and develop their staff in the control field to reduce the costs of poor quality. The results indicate the need to pay attention to the following:

- The need to provide a qualified cadre for the supervisory work through the appointment of persons with experience in the field of work to control quality costs.
- Involving employees in training courses inside and outside the country to learn preventive control measures to reduce quality costs.
- The need to modernize production machines and equipment and replace them with machines and equipment that will reduce the rates of damage and waste.
- Working on using high-quality raw materials to reduce the costs of conformity and the costs of internal and external failure.

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