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The Role of Process Re-Engineering Technology in Reducing Costs and Improving Financial Performance Indicators (An Applied Study in the General Company for Electronic Industries)

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Abstract:

The research aims to show the role of process reengineering technology in reducing costs and improving financial performance indicators by testing the company's operations and making substantial changes that ensure increased efficiency and productive effectiveness of operations, thus achieving high-quality performance, reducing costs, and enhancing customer satisfaction, in addition to improving competitiveness and meeting customer needs in line with the requirements of the modern business environment and its rapid changes and developments. The study was conducted at the General Company for Electronic Industries, and one of its products, power transformers, was selected in the fiscal year 2022 data. The study came up with a number of findings. The most important of these was that the use of process reengineering technology reduces unnecessary expenses related to parts and features of the product and contributes to the identification of components that need to be improved in value, thus helping to improve the profitability of the product in a way that is in line with the company's goals.

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keywords: Process re-engineering technology, cost reduction, financial performance indicators.

Introduction:

The contemporary business environment has witnessed rapid and successive developments, such as scientific and technological development, changing the needs and tastes of customers, focusing on the customer, and the emergence of contemporary cost and administrative techniques that are more suited to the demands of this environment, which call for business process reengineering (BPR) due to its rapid and continuous changes and developments, a prominent technology that addresses the need for companies to transform their processes and activities that suffer from poor performance or technical or technological deficiencies. It radically re-designs operations to reach the best performance by making changes to the operations of the economic unit whose activities need Change without compromising quality, and this technology also helps in redesigning operations to eliminate unnecessary or wasteful work, increase productivity, and learn how to execute the change process in order to become competitive.

The first topic: research methodology and previous studies

1-1 Research methodology:

The study problem, its goals, significance, hypothesis, scientific methodology, and sample will all be covered in this paragraph.

1-1-1 Research problem:

The research problem lies in the fact that Iraqi industrial companies suffer from the problem of high costs of their products compared to competing foreign products, and these companies also suffer from low profitability of these products, and despite that, The research challenge can be stated as follows: (Does the implementation of process re-engineering technology help in decreasing costs and increasing financial performance indicators?) since these organizations do not apply contemporary cost and administrative procedures.

1-1-2 Research importance:

The significance of business process reengineering technology is what makes this research important, as this technology is one of

the modern technologies that use modern technical methods and means to develop work, reduce costs, achieve high customer satisfaction, and enhance financial performance metrics, which enhances the company's competitive position, fulfills customer demands, and offers insight into the design and manufacturing processes. This technology is compliant with the demands of the modern business environment.

1-1-3 Research objectives:

The study attempts to show how process re-engineering technologies can lower expenses and enhance financial performance metrics by testing the company's operations and making fundamental changes in a way that ensures increased efficiency and productive effectiveness of operations and thus achieving Quality performance, cost reduction, and improved customer satisfaction, along with enhanced competitive positioning and achievement of customer requirements in a manner consistent with the demands of the modern business environment and the quick changes and advancements that go along with it.

1-1-4 Research hypothesis:

The following basic hypothesis serves as the foundation for the research: (The deployment of process reengineering technology helps to cut costs and enhance financial performance indicators in a way that is compatible with the needs of the present business environment).

1-1-5 Research approaches:

To accomplish the goals of the study, two scientific methods were used: the deductive method, which was followed in the theoretical side, based on research, theses, university dissertations, articles and writings published on the global network of information and Arabic and foreign books. With its officials, reports, cost and financial data.

1-1-6 Research sample:

The General Company for Electronic Industries was selected as a research sample because its products are more expensive than those of its competitors and have lower profitability, as well as the management's need to apply contemporary cost and administrative techniques such as process re-engineering technology, and the search for financial year 2022 data was

applied because it is closest to the current reality of performance The company is a research sample from other years.

1-2 Previous studies and the contribution of the current research:

In addition to discussing earlier research on the subject, this section will highlight the contribution of this study and how it differs from earlier research.

1-2-1 Previous studies:

Previous studies related to the current research topic can be clarified through the following:

1. **A study (Herzog, et.al., 2010) entitled "(Development and Validation of Variables Business Process Reengineering)":** The study aimed to explore the basic characteristics of process reengineering technology and validate and evaluate the variables of this technology. The study concluded that understanding the objectives and policies of process re-engineering and training employees to apply them can help in designing proposals according to customer requirements and improving quality, as well as reducing costs and accelerating response time for customers in a manner that leads to achieving competitive advantage.
2. **A study (Khodambashi, 2013) entitled "(Business Process Reengineering Application in Healthcare in a Relation to Health Information Systems)":** The study aimed to apply process reengineering technology in health units, highlighting the critical success factors that health care institutions must consider and implement Process re-engineering in its operation. The study concluded that the implementation of process re-engineering and applying it continuously helped in improving the effectiveness of workflow and managing changes effectively and efficiently.
3. **A study (Ben Zaim, 2014) entitled "(Re-engineering as one of the organizational change strategies)":** The purpose of the study was to determine the degree of corporate management interest in re-engineering and organizational change. The study came to the conclusion that the components of re-engineering are related to the change process's success, as this approach is considered one of the most important entrances to organizational change. The content of the main and secondary study hypotheses.

4. **A study (Alwan, 2015) entitled "(Integration of Process Re-engineering and Total Quality Costs to Achieve Competitive Advantage)":** The study aimed to demonstrate the importance of using process re-engineering and quality costs in improving the competitive situation and meeting the requirements of customers and the ability to confront foreign products. The study concluded that the companies whose industrial processes are re-engineered are the units that suffer from high manufacturing costs or that want to excel more and seize the competition market.
5. **A study (Khalaf, 2016) entitled "(Re-engineering of administrative processes in light of the strategic direction)":** The purpose of the study was to determine the degree of strategic direction and how it affected the re-engineering of administrative procedures. The study came to several results, the most significant of which is that, as the strategic direction comes before the re-engineering of administrative processes, there is a positive correlation between the two.
6. **A study (Hussein, 2021) entitled "(Operations Re-engineering and its Relationship to Strategic Financial Performance)":** The study aimed to determine the impact of process re-engineering in improving strategic financial performance by identifying the reality of operations re-engineering and strategic performance. The study concluded that paying attention to some variables within the re-engineering of operations, which are influential in the dimensions of the strategic financial performance, and neglecting other variables, it is not possible to reach a strong financial performance, as well as the lack of adoption and application of re-engineering of operations leads to weak strategic financial performance.

1-2-2 The contribution of the current research and its difference from previous studies:

The following explains the present study's contribution and how it differs from earlier research:

1. The current research is complementary to previous studies, as it started from what these studies ended with, as process re-engineering was applied in order to reduce costs and improve product profitability by making fundamental changes in a way that guarantees increased production efficiency and effectiveness, improved performance quality, enhanced customer satisfaction, and improved competitive position.

2. Contribute to laying down a rationale for the use of process re-engineering technology in businesses that specialize in electronic industries in a way that helps them lower costs as much as possible, enhance customer value, boost product profitability, and fortify their competitive position.

The second topic: the theoretical framework of the research

2-1 The concept of process re-engineering technology:

Process re-engineering technology is viewed as one of the strategic cost management strategies that focus on how to implement the change process to become competitive and how to restructure operations to eliminate waste or extra effort and increase efficiency (Sungau, et.al., 2013:212).

And there are those who view the technology of process re-engineering as a radical rethinking and re-design of the business process, its structure and associated management systems to provide a step for performance improvements in general in the company (Oakland, 2014:241).

Process re-engineering technology works on rethinking and redesigning operations With the aim of achieving substantial and superior improvements in performance standards, specifically quality, cost, service and speed, by reviewing, reorganizing and simplifying the company's management processes, work practices, business structures and external relations (Shaqqour & Al-.Kassar, 2016:74).

The organization, organizational processes, and information systems are restructured to achieve radical improvements in both time and cost, and everything related to goods and services provided to the customer. Process re-engineering technology represents a task or activity that adds value to the company. It is also a comprehensive analysis, basic rethinking, redesign, and others (Kenneth, et al. al., 2018:12).

Thus, the economic unit is performance in terms of cost, time, service, and quality will significantly improve as a result of this fundamental rethinking and radical restructuring of business operations. The goal of this business process redesign is to significantly boost efficiency by achieving additional improvements in performance measures including cost, quality, service, and speed. Additionally, it cuts down on waste in attempts to boost output and earnings (Golchini, 2021:33).

Despite the difference in the previous concepts among the researchers, they agreed on the basic foundations of process re-engineering, which can be clarified through the following:

1. **Essential:** It is the rethinking of the company and its employees, that is, when applying process re-engineering. Therefore, the company must ask basic questions about their units and how they work, by asking the following questions: (Bhaskar, 2018:67)
   a. Why do we do what we do. ?
   b. Why do we do it the way we do it. ?
   c. How can we improve this or that process? .
2. **Radical redesign:** It is the changes that occur from the roots, not superficial changes to obtain new innovations (Al-Quraishi, 2020: 46).
3. **Superior improvements:** These are the huge improvements that process re-engineering seeks to bring about in performance rates such as quality and speed of work completion (Abu Hazeem, 2014: 26).
4. **Operations:** It is a group of activities designed to produce specific outputs for a customer or a specific market (Nisha, 2017:145).

Accordingly, it can be said that the technology of process re-engineering is one of the strategic cost management techniques that are concerned with rethinking and radical redesign with the aim of achieving superior and fundamental improvements in performance standards, namely quality, cost, service and speed in a way that leads to achieving competitive advantage with high efficiency and effectiveness.

2-2 The importance of process re-engineering technology:

The acceleration of the development of economic life around the world leads to rapid changes with the increase in competition that prompted economic units to pay attention to process re-engineering and its application, and thus the importance of process re-engineering increased through the following:

1. The technology of process re-engineering is one of the modern technologies that are used to make radical and fundamental improvements to the performance of strategic activities and meet the needs of customers, which increase its strategic role and importance in improving the precedence of competition (Anid, 2015: 44).

2. The importance of process re-engineering technology lies in the advantages achieved by this technology in reducing costs that result from operations, simplifying systems and processes, and involving employees and workers in decision-making (Al-Saeedi, 2020: 62).
3. Process re-engineering technology helps achieve profits and increase market share by responding to competitive pressures, and using modern methods of high value that help improve product quality (Al-Sammak et al., 263: 2021).
4. The technology of process re-engineering helps to transform the business from simple to complex in a way that makes the responsibility shared among the members of the work team (Wahiba, 2018: 10).
5. Re-engineering technology helps to reach a high level of quality, whether in products or production processes (Dhaidan, 2021: 172).
6. The process re-engineering technology is of great importance, as similar jobs are merged into one job, which contributes to the implementation of many steps that are similar in nature at one time (Wahbi, 2018: 53).

From the foregoing, it can be said that the importance of process re-engineering lies in its ability to change the reality of economic units because of the reduction in the costs of these units, the simplification of operations, the removal of restrictions that limit the creativity of employees, as well as the strengthening of the competitive position of the unit, the increase of its profits, and the departure from the old methods of managing work. within the company.

2-3 Steps to apply process re-engineering technology:

The steps of applying process re-engineering technology allow companies to prepare well for the success of the change process, and these steps differ according to thinkers, but in general, the steps for process re-engineering are as follows:

1. **Determine the strategy that the company aims to achieve and the most important processes to be re-engineered:** that is, the vision of the economic unit that it wants to reach, such as improving the value of the product and achieving the competitive advantage. Until this is achieved, all processes related to the production of the product that the company wishes to change and all activities must be reviewed in terms of technology. Design and employee skills (Khodambashi, 2013:951).

2. **Defining a team with multiple functions to re-engineer operations:** After knowing the vision and strategy of the economic unit, a multi-functional team is identified, including research, development, design, cost accounts, production and marketing (Aquila, 2017:27).
3. **Determine the customer's requirements:** The first task of the team is to know the customer's requirements that he wants to be available in the product, as the company uses the customer's requirements to advance towards improving the design processes and improving the current product (Mohapatra, 2020: 237-238).
4. **Determining the engineering characteristics according to the customer's requirements:** In this step, the engineering requirements are determined, as the interviews are with engineers related to the production process to determine the requirements according to the customers' desires, which are limited to the modernity of the design, the strengthening processes and the product's rigidity (Naz, et.al, 2016:82).
5. **Putting the stages of process re-engineering into practice:** Here, the technology is implemented on the ground in a manner consistent with the company's capabilities (Jawad, 2017: 247).

From the foregoing, it can be said that the process of applying these steps will enhance the competitive position of the company as well as reduce costs and improve the quality and value of products in addition to improving the internal situation of the company, whether for employees or department managers, which could ultimately lead to improving the performance of this company in general.

2-4 The role of process re-engineering technology in reducing costs:

Reducing costs is seen as a process of reducing expenses in order to achieve savings in costs, an increase in the company's profits from the previous one, or even stopping losses, and in order to achieve it, good planning and organization is used for both project departments and stages of production, and through the optimal use of available resources. (Shaherazade, 2018: 80).

In the short term, cutting costs is the simplest method to boost profitability. This is probably due to the fact that it is completely within the company's control and, with proper management, may

serve as the primary catalyst for long-term success. Lowering costs leads to increased profits and, consequently, improved financial performance over a specific period (Bragg, 2010: 7).

Cost reduction is the process of removing unwanted expenses from the total cost required for a production process. Cost reduction is defined as the tactics and measures used early in a product's life cycle that can result in lower manufacturing and consumption costs later on (Walker, et.al., 2016:67).

The process re-engineering technology seeks to achieve a set of goals, and in order to achieve these goals, it requires its use with other technologies that support it, or solve the problems facing the implementation of process re-engineering if it is used alone, and among these problems is identifying the processes that need to be re-engineered. It relies on technical requirements in order to reduce costs to the lowest possible level (Rai, 2019:9).

Process re-engineering technology helps identify customer needs through the product development cycle, as well as the company can translate customer needs based on current needs at each stage of the product development cycle, this technology provides results through which the company can reduce production costs by evaluating product details from In terms of ingredients, which reduces production costs and meets market expectations in the best possible way (Ginting, et al, 2020:772).

From the foregoing, it can be said that process re-engineering technology helps in reducing costs, after knowing the objectives of the company and identifying the processes that suffer from many problems, the most important of which is the high costs of raw materials, as well as the high costs of production processes and an unjustified increase in time spent by some workers in operations activities. With high costs, old machinery and equipment, and an increase in workers' wages and numbers, where the research focused on the process of reducing costs on the production stages of the company, which consists of six production stages, through the use of the method of costing based on time-oriented activities, which contributes to reducing the costs of the time spent in the activities of the production stages by calculating the estimated time for each activity of the activities of the production stages and applying Equations of time to calculate the cost of each production stage of materials, wages and indirect industrial expenses.

2-5 The role of process re-engineering technology in improving financial performance indicators:

The goal of employing financial indicators is to impartially evaluate how well businesses are performing in a variety of areas, including their capacity to make profits and returns on investments, as well as their ability and efficiency in successfully fulfilling their financial obligations, ascertaining the actual value of their various assets and the extent of their debts, raising new resources, and managing financial issues (Burja & Marginean, 2014:217).

The company's financial performance is measured through many indicators, which allow users to evaluate fine details regarding the potential efficiency and effectiveness of the company, and among these indicators are the following: (Bogićević, et.al., 2016:8), (Ganyam & Lvungu, 2019:42)

1. **The ratio of net profit to sales revenue:** This ratio aims to determine the company's success in collecting profit for every dollar.
2. **Return on Assets Ratio (ROA):** This ratio measures the extent of the company's ability to achieve profits from the assets invested in it or the extent of its effectiveness in using the available resources.
3. **Ratio of return on equity (ROE):** This ratio measures the extent to which the company's management uses financing from equity for business development.
4. **Net profit growth rate:** This percentage expresses the percentage change in net profit achieved in the company during a specified period of time.
5. **Share price-to-earnings ratio:** This ratio is used to compare investment opportunities with shares of the same type and to assess a company's share price based on profitability.
6. **Growth rate in earnings per share:** This percentage expresses the rate of change in earnings per share achieved in the company during a specified period of time.

Financial ratios obtained from income statement and balance sheet data are regarded as essential assessment tools for assessing corporate performance, and process reengineering technology helps give quantitative and qualitative indicators that represent the organization's performance, and the financial ratios allow the user to summarize and analyze the data in order to enable him to make appropriate decisions (Mardiana & Dianata, 2018: 261).

Process re-engineering technology reduces unnecessary costs associated with activities that do not add value to the company, which leads to improving financial performance indicators, especially those indicators related to profitability. The following highlights how crucial process re-engineering technology is to raising financial performance metrics: (Al- Matari, et.al., 2014:25), (Osman, 2018: 3-4), (Fujian, 2019:270).

1. Determine the company's capacity to achieve its objectives.

2. Provide information that allows the company to understand its financial situation.

3. Determine the company's creditworthiness and its ability to meet its obligations.

4. Evaluate the efficiency of administrative staff and their effectiveness in achieving the company's objectives.

5. Understand and monitor the company's activities and operations, as well as the financial and economic situation of its environment.It is evident from the foregoing that process re-engineering technology works to reduce unnecessary costs in addition to improving the quality and performance of the product, which leads to improving financial performance indicators in a manner that is commensurate with the different environmental requirements.

the applied side of the research

3-1 Application of process re-engineering technology in the General Company for Electronic Industries:

For the purpose of applying process re-engineering technology in the General Company for Electronic Industries, a set of steps must be followed, which are defining the strategy that the company aims to achieve and the most important processes to be re-engineered, defining a team with multiple functions to re-engineer operations, defining customer requirements, in addition to defining engineering characteristics according to requirements The customer, and finally putting the process re-engineering stages into practice. These steps can be applied in the research sample company as shown below:

First: Determining the strategy that the company aims to achieve and the most important processes to be re-engineered: During this step, the strategy and objectives of the

General Company for Electronic Industries that it wants to reach are determined, and this is represented by reducing the cost of the power transformer product by reviewing all the processes related to its production. operations through the following:

1. Silicon iron cutting and winding using a high-speed and accurate curling iron machine, according to the capacity of the transformer, to manufacture cores.
2. Wrapping the low-pressure coils of copper sheets insulated between its layers with an insulator of the type of kraft paper that is not chemically treated.
3. Winding of the high-pressure coils with varnish-insulated copper wires, which are wound directly onto the low-pressure coil, ensuring a reduction in size and providing high mechanical strength.

4. Pressing and drying of the coils using a special machine and drying ovens, and assembly of the coils with the iron cores at specific points on the production line.

5. Assembly of all copper connections, as well as the no-load voltage regulators and ceramic insulators, and drying of the transformer and removal of moisture from the coils before placing the parts in the tank.

6. Installation of the transformer's active components inside the tanks and subsequent oil filling in vacuum chambers.

The actual cost of the power transformer, broken down into direct materials, direct labor, and indirect costs for the year 2022, is detailed below.:

Schedule (1): The actual cost of the power transformer product during the year 2022

No.	Cost elements	Details	Cost per unit		Cost for productions	
			Amount (partial)	Amount (total)	Amount (partial)	Amount (total)
1	Direct materials	Primary file	4850		41967050	
		Secondary file	5640		48802920	
		Board Switch	750		6489750	
		Cover	1200		10383600	
		Base	2250		19469250	
		Clamp	440		3807320	
		Transformer heart	580		5018740	
		Power source	2100		18171300	
		The magnetic field	1800		15575400	
		Dielectric	650		5624450	
		Total		20260		175309780
2	Direct labor	Production workers' wages	4300		37207900	
		Total		4300		37207900
3	Indirect costs	Manufacturing costs	2830		24487990	
		Marketing costs	1010		8739530	
		Administrative costs	1300		11248900	

		Total		**5140**		**44476420**
		Total costs		**29700**		**256994100**

Source: Prepared by the researchers based on the data available in the company.

It is clear from schedule (1) that the actual cost of the power transformer product during the year 2022 was in the amount of (29,700) dinars, and the number of units produced during this year was (8,653) units, and thus the total cost of production during this year was in the amount of (256,994,100) dinars. Management seeks to reduce costs in order to help increase profits.

Second: Determining a multi-functional team for process re-engineering: Determining a multi-functional work team and specializations is one of the important matters when applying the process re-engineering technology, as those responsible for applying the steps of change in the company continuously undertake the research sample and supervise the results of the process, and this team consists from the following:

1. **The company manager or the company's assistant manager:** his task is to supervise the work of the team because of the powers and capabilities he possesses that allow him to manage the re-engineering process by directing the workers in the factory and taking the necessary decisions for the team's work.
2. **Director of Research and Development:** He is responsible for providing a design for the company's product in a way that meets the requirements of customers by updating the product's specific characteristics.
3. **Production Manager:** He is responsible for developing the process of organizing the production process in a more accurate and smooth way, and working on manufacturing the product as quickly as possible.
4. **Marketing Manager:** He is in charge of determining the needs and requirements of customers for the power transformer product and identifying the competing products to provide a competing product. He also conducts a study of the prices of competing products for the company's product and works to determine the price of the new product that is close or similar to the competing products in the market.
5. **Cost Accountant:** The cost accountant undertakes the task of calculating costs for the total production per unit before and after applying the technology.

And when needed, it is possible to seek the help of members from outside the laboratory who are considered as consultants and who

must have skills, objectivity and impartiality in the various fields of designing and implementing modern systems.

Third: Determining the customer's requirements: The first task of the team is to know the customer's requirements that he wants to be available in the product, and the design processes are improved and the current product is improved in light of the customer's requirements. A set of requirements that are appropriate to the customer's needs, and the customers' requirements and their relative importance to the power transformer product can be clarified through the following schedule:

Schedule (2): Customer requirements and their relative importance to the power transformer product

Customer's requirements	weight					weighted arithmetic mean	Relative importance (%)	Arrange the requirements
	Very important	Important	Somewhat important	Not important	Not important at all			
Product performance	28	5	4	2	1	4.425	14.8%	2
Reliability	31	1	5	1	2	4.45	14.9%	1
Conformity to specifications and standards	21	11	1	4	3	4.075	13.7%	4
Durability	26	6	6	1	1	4.375	14.7%	3
Serviceability	11	9	13	2	5	3.475	11.6%	6
Aesthetic	1	8	9	11	11	2.425	8.1%	8
Availability of agents and distributors	15	7	11	3	4	3.65	12.2%	5
The price	2	14	8	13	3	2.975	10%	7
Total	135	61	57	37	30	29.85	100%	-

Source: Prepared by the researchers.

Schedule (2) shows that there is a set of requirements desired by the customer, namely product performance, reliability, conformity to specifications and standards, durability, serviceability, aesthetics, availability of agents and distributors, and price. It is clear from the above table that the requirement of reliability (reliability) has ranked first in customers' preferences, as it reached the arithmetic mean (4.45) and the relative importance (14.9%), while the requirement of aesthetics came in the last stage, as the arithmetic mean reached (2.425) and the relative importance (8.1%).

Fourth: Determining the engineering characteristics according to the customer's requirements: In this step, the engineering requirements are determined, as the interviews are

with engineers related to the production process to determine the requirements according to the customers' desires, which are limited to the modernity of the design and the durability of the product. The components of the product that contain the engineering characteristics can be clarified through the following:

1. **The iron core:** It is made of the finest types of cold-rolled oriented electrical silicon iron, which is characterized by its high efficiency and low specific loss in it, in addition to the design of oil cooling channels inside the iron core. There is the new innovative method used in assembling the iron core chips for power transformers.
2. **Coils:** The coils for these transformers are made of copper wires insulated with kraft paper that is not chemically treated, which gives the coil a high endurance against electrical impulses, in addition to increasing the intensity of isolation of these coils.
3. **Reservoir:** The power transformer tank is manufactured from hot rolled iron sheets formed according to the types of transformers. It is painted from the outside with three different types of paint to prevent moisture from entering and not being affected by external weather conditions. Oil leakage.

The engineering characteristics of the power transformer product can be clarified according to the customer's requirements through the following schedule

Schedule (3): Engineering characteristics of the power transformer product according to customer requirements

No.	Engineering Characteristics	Characteristics requested by the customer	Characteristics already present in the product
1	Voltages	220-240 volts	220-240 volts
2	The speed	1425	1600
3	Rated current ampere	1.6 amps	1.8 amps
4	Efficiency	65%	85%
5	Cover type	copper	copper
6	Insulation class	water	water
7	Noise level	50 dB max	50 dB max
8	Relative humidity	95%	95%
9	Protection type	Fuse	Fuse
10	Ambient temperature	45 degrees Celsius	65 degrees Celsius
11	Rate of temperature rise	60 degrees Celsius	60 degrees Celsius
12	Cooling method	self-ventilation	self-ventilation
13	Power factor	less than 85%	less than 75%
14	Wire winding	copper	copper

Source: Prepared by the researchers based on the data available in the company.

Schedule (3) shows that there are five characteristics already present in the product that do not match the customer's requirements, which are the speed, the rated current ampere, the efficiency, the ambient temperature, and the power factor, so these

characteristics must be modified in a manner consistent with the customer's requirements.

Fifth: Putting the stages of process re-engineering into practice: here the technology is implemented on the ground in a manner that is consistent with the General Company for Electronic Industries, and in order to start the process of applying the process re-engineering technology by reviewing the previous steps to achieve the company's goals of reducing costs, improving and developing production methods, and improving the value of The product is in accordance with the requirements of customers, i.e. providing a product according to the customer's needs, which were properly represented, as the customers' needs and desires are represented by the engineering characteristics of the product and the production process that add value to the product, either by reducing costs and after relying on the application of process re-engineering technology to reduce and exclude non-host activities for value.

3-2 The role of process re-engineering technology in reducing costs in the General Company for Electronic Industries:

After applying the process re-engineering technology, it became clear that there are a number of effects on the cost of the product, which can be explained through the following:

1. The cost of raw materials: It is noted that the cost of the primary file after applying the process re-engineering technology has become (3650) dinars, and the cost of the secondary file has become (4200) dinars, and the cost of the base has become (1500) dinars, and the cost of the energy source has become (1900) dinars, And the cost of the magnetic field has become (1450) dinars.
2. Direct labor: There has been no change in direct wages because the number of direct workers is sufficient without any increase and cannot be reduced.
3. Indirect costs: The application of process re-engineering technology helps the research sample company in standardizing operations and reducing damage and loss, which leads to a reduction of indirect industrial costs by (10%).

The cost of the power transformer product after applying the process re-engineering technology during the year 2022 can be clarified through the following:

Schedule (4): The cost of the power transformer product after applying the process re-engineering technology during the year 2022

No.	Cost elements	Details	Cost per unit		Cost for productions	
			Amount (partial)	Amount (total)	Amount (partial)	Amount (total)
1	Direct materials	Primary file Secondary file Board Switch Cover Base Clamp Transformer heart Power source The magnetic field Dielectric	3650 4200 750 1200 1500 440 580 1900 1450 650		31583450 36342600 6489750 10383600 12979500 3807320 5018740 16440700 12546850 5624450	
		Total		16320		141216960
2	Direct labor	Production workers' wages	4300		37207900	
		Total		4300		37207900
3	Indirect costs	Manufacturing costs Marketing costs Administrative costs	2547 1010 1300		22039191 8739530 11248900	
		Total		4857		42027621
		Total costs		25477		220452481

Source: Prepared by the researchers.

It is clear from schedule (4) that the cost of one unit of the power transformer product has become an amount of (25477) dinars, meaning that the total cost of production has become an amount of (220452481) dinars, and the cost can be compared before and after applying the process re-engineering technology through the following schedule:

Schedule (5): Comparing the cost of the power transformer product before and after applying the process re-engineering technology during the year 2022

No.	Cost elements	Cost before applying process re-engineering technology		Cost after applying process re-engineering technology		Cost reduction	
		Cost per unit	Cost for productions	Cost per unit	Cost for productions	Cost per unit	Cost for productions
1	Direct materials	20260	175309780	16320	141216960	3940	34092820
2	Direct labor	4300	37207900	4300	37207900	0	0
3	Indirect costs	5140	44476420	4857	42027621	283	2448799
	Total	29700	256994100	25477	220452481	4223	36541619

Source: prepared by the researchers based on tables (1) and (4).

It is clear from schedule (5) that the cost of one unit of the power transformer product after applying the process re-engineering technology has become (25477) dinars, after it was (29,700) dinars, and thus the total cost of production has become an amount of (220452481) dinars after it was (256,994,100) dinars, meaning that the amount of cost reduction was (4223) dinars per unit and (36,541,619) dinars for total production. Accordingly, it

can be said that process re-engineering technology can help reduce costs.

It is possible to compare the profit of the power transformer product before and after applying the process re-engineering technology during the year 2022 through the following schedule:

Schedule (6): Comparing the profit of the power transformer product before and after applying the process re-engineering technology during the year 2022

Details	Before applying process re-engineering technology	After applying process re-engineering technology
Sales revenue	302855000	302855000
(-)Variable Costs:		
Direct materials cost	175309780	141216960
Direct labor cost	37207900	37207900
Total variable costs	212517680	178424860
Contribution margin	90337320	124430140
(-)Fixed costs:		
Manufacturing	24487990	22039191
Marketing	8739530	8739530
Administrative	11248900	11248900
Total fixed costs	44476420	42027621
Net income	45860900	82402519
The ratio of net income to sales revenue	15.14%	27.21%

It is nc ne process re-engineering technology has become an amount of (82,402,519) after it was an amount of (45,860,900), meaning that the amount of increase in the net profit as a result of applying this technology was an amount of (36,541,619) dinars, and the percentage Net profit to sales revenue increased from (15.14%) to (27.21%).

3-3 The role of process re-engineering technology in improving financial performance indicators in the General Company for Electronic Industries:

In order to demonstrate the role of process re-engineering technology The General Company for Electronic Industries must compute a number of financial metrics both before and after implementing this technology in order to improve the financial performance indicators. These metrics include the net profit ratio to sales revenue, the return on assets ratio, the return on equity ratio, Net profit growth rate and share price-to-earnings ratio, the growth rate in earnings per share. It is possible to compare the financial performance indicators before and after applying the process re-engineering technology during the year 2022 through the following schedule:

Schedule (7): Comparison of financial performance indicators before and after the implementation of process re-engineering technology during the year 2022

No.	Indicators	Before applying process re-	After applying process re-

		engineering technology		engineering technology	
		Calculating	Value of the indicator	Calculating	Value of the indicator
1	The ratio of net profit to sales revenue	45860900 ÷ 302855000	15.14%	82402519 ÷ 302855000	27.21%
2	Return on Assets (ROA)	45860900 ÷ 1915674000	2.39%	82402519 ÷ 1915674000	4.30%
3	Ratio of return on equity (ROE)	45860900 ÷ 607267000	7.55%	82402519 ÷ 607267000	13.57%
4	The growth rate of net profit	(45860900 – 36415200) ÷ 36415200	25.94%	(82402519 - 36415200) ÷ 36415200	126.29%
5	The share price-to-earnings ratio	450 ÷ 660	68.18%	450 ÷ 840	53.57%
6	The growth rate of earnings per share	(660 - 570) ÷ 570	15.79%	(840– 570) ÷ 570	47.37%

Source: prepared by the researchers.

It is clear from schedule (7) that the ratio of net profit to sales revenue before the application of the technology was (15.14%) and after the application of the technology it became (27.21%), and the return on assets was (2.39%) and became (4.30%), either the return on Ownership rights were (7.55%) and became (13.57%), while the growth rate in net profit was (25.94%) and became (126.29%), and the share price-to-earnings ratio was (68.18%) and became (53.57%). And the growth rate in earnings per share was (15.79%) and became (47.37%), and this indicates that the application of process re-engineering technology in the General Company for Electronic Industries has helped in improving financial performance indicators.

Based on the foregoing, the research hypothesis has been validated as it can be claimed that the use of process re-engineering technology aids in cost reduction and enhances financial performance metrics in a manner that is consistent with the demands of the contemporary business environment.

The fourth topic: conclusions and recommendations

4-1 Conclusions:

The following findings have been drawn from the theoretical and applied research:

1. One of the strategic cost management methods that is relevant is process re-engineering technology with rethinking and radical redesign with the aim of achieving superior and fundamental improvements in performance standards, namely quality, cost, service and speed in a way that leads to achieving competitive advantage with high efficiency and effectiveness.
2. The importance of process re-engineering technology stems from its ability to change the reality of economic units

because of the reduction in the costs of these units, the simplification of operations, the removal of restrictions that limit the creativity of employees, as well as the strengthening of the competitive position of the unit, the increase of its profits, and the departure from the old methods of managing work within The company.

3. The technology of process re-engineering is suitable for achieving integration between the activities of the economic unit's operations through a radical redesign of those activities, which requires adapting to the rapid changes in the competition environment.
4. The technology of process re-engineering helps in reducing costs, after knowing the objectives of the company and identifying the processes that suffer from many problems, the most important of which are the high costs of raw materials, as well as the high costs of production processes and an unjustified increase in time consumed by some employees.

5. In addition to enhancing the product's quality and performance, process re-engineering technology lowers needless expenses, which improves financial performance metrics in a way that is appropriate for the various environmental criteria.
6. The use of process re-engineering technology aids in cost reduction and enhances financial performance metrics in a manner that is appropriate for the demands of the contemporary corporate environment.

4-2 Recommendations:

The following is a list of the most crucial suggestions based on the research's findings:

1. Because cost and management strategies are more suited to the quick changes that come with the modern business environment, the company, which is the research sample, chooses the strategic approach to cost management.
2. Focusing on listening to the customer's voice and knowing his requirements, as it is a source of strength and revenue for the research sample laboratory and the basis for survival and growth in the business environment. Therefore, these requirements must be known and met in terms of functions, components, quality and price.
3. The research sample company's interest in using process re-engineering technology in light of the quality function's deployment through the creation of a multifunctional work team with the help of university professors and researchers in order to create the appropriate environment for applying

these steps on the ground and contributing to solving the problems at hand.

4. Replacing machines and equipment with modern machines and equipment that enable them to improve product manufacturing and reduce waste of time and manpower.
5. Establishing training and development courses for the factory workers with regard to cost and management techniques, with regard to techniques that have proven effective in improving product values and reducing costs, as well as techniques that contribute to listening to the customer's voice and knowing his needs. Among these technologies are process re-engineering and the deployment of the quality function.
6. Application of process re-engineering technology because of its important role in determining customer requirements and knowing their desires, and what they are of importance in knowing and tracking product costs to avoid waste and contribute to reducing costs and improving financial performance indicators.

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