**Re-Organization of Production Facilities and its role in achieving technical Innovation/Study** **Reconnaissance the Opinion of a Sample of Company Employees for** **the Manufacturing of Readymade Clothes / ready-made Clothing Plant in Mosul**

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**ABSTRACT**

The current research aims to highlight the relationship and the effect between the re-organization of production facilities processes, and technical innovation of the company for the manufacturing of ready-made wears from the factory through (the opinion of employees) reconnaissance survey . The researchers adopted the variable for the study is re-organization of production facilities processes as an independent variable and the technical innovation as a dependent variable. The researchers were able to obtain information related to the research for establishing the theoretical ground based on the relevant Arab and Foreign sources. The field side applied a questionnaire prepared for this purpose on the department managers and production lines in the laboratory, and the researchers reached a set of conclusions, and recommendations for the laboratory, to help the future researchers to evoke the idea of ​​research similar it .

**Key words:**
re-organization of production facilities, technical innovation, product innovation, process innovation.

**The first approach**

**First: Research Problem**:

The rapid changes in the business environment due to the great technical development of the administrations of the industrial organizations, operating and adopying the necessary methods. These methods allow the organizational administration to face the environmental threats and maintain the competitive position in business. Thus, forcing corporate administrations need to access the entries which are capable of adapting the those changes. As the proposals presented by researchers in this regard shows the entrance to the re-organization of production facilities processes can contribute to addressing the problems of industrial organizations that live in such circumstances.

Therefore, the problem of the current research is to determine the ability of the wanted plant to link the dimensions of re-organization of production facilities operations to the dimensions of technical innovation. To show the extent of success, the following questions finding their answers can reflect the dimensions of the current research problem:

**1.** To what extent the management of the wanted plant is dependent on the dimensions of re-organization of production facilities?

**2**. What are the dimensions of technical innovation adopted by the current study in the management of the wanted plant?

**3**. What is the nature of the relationship and the impact between the dimensions of the re-organization of production facilities processes and the dimensions of technical innovation in the laboratory in question?

**Second: The Hypothesis of Research**

**1.** The first main hypothesis: There is a significant correlation between the phases of the re-organization of production facilities processes and the kinds of technical innovation in the laboratory in question which emanate a sub-assumption in the following:

**a**. There is a significant correlation between the combined re-organization of production facilities processes combined and the creativity produced in the plant under search.

**B.** There is a significant correlation between the combined re-organization of production facilities processes combined and the process of creativity in the plant under search.

**2.** The second main hypothesis: There is a significant and effect relationship between the phases of the re-organization of production facilities of the different combined processes and the type of combined technicalinnovation in the laboratory in question which emanates a sub-assumption in the following:

**a.** There is a significant correlation between the combined processes of re-organization of production facilities and the creativity produced in the plant under current research.

**B.** There is a significant correlation between the combined processes of re-organization of production facilities and the process of creativity in the plant under this present research.

**Third: Methods of Data Collection and Analysis:**

The researchers relied on the collected data for research and information on the methods in the following :

**1**. The use of Arab and Foreign sources as well as conferences, letters and universities related to the subject of research to cover the theoretical side of the study and support the field.

**2.** Personal interviews: In addition to personal interviews with some staff for clarifying the questionnaire form.

**3**. Questionnaire form: To obtain the data and information related to the current research, the questionnaire form was prepared in light of the scientific vision achieved through the survey of scientific sources, related to the subject of the study. The terms process of re-organization of production facilities variables, have been prepared for several opinions and studies, including: (Zuwainam, 2008), (Al-Obaidi, 2005) (Hanoun, 2010), as well as terms of the technological innovation variables, were prepared on several opinions and studies (Ibrahim and Al-Taweel, 2010) (Rahim and Salman, 2005).

**The second approach**

The conceptual framework for the re-organization of production facilities process

**First: the notion of re-organization of production facilities**

The concept of re-organization of production facilities processes only appeared in the 1990s, but its basis and rules were set at the beginning of the 20th century. The first use of this term by writers and researchers (Hammer) was in 1990 in (Harvard Business Review) magazine, a group of research efforts were published and were subsequently completed to benefit them by the researchers.

In this research, the term re-organization of production facilities processes will be used because the concept of re-organization of production facilities not only includes the administrative work, but includes all the work in the organization from the supplier to the customer. The following are the concepts of re-organization of production facilities:

**1.** It is the rapid and radical re-design of valuable management and strategic processes, as well as supporting systems, policies and organizational structures to maximize workflows and increase productivity (strong).

**2**. Re-organization of production facilities is a radical re-design process to improve performance in terms of cost, quality, service and speed, which is a re-invention rather than a gradual improvement (Hazir & Rander & Munson, 2017,750)

**3.** A serious and fundamental re-thinking of the organization's operations and radical redesign to achieve revolutionary improvements in important performance standards such as cost-quality-service-fast delivery (Hammer and Champy, 1993,24).

**4.** Making a fundamental change in organizational processes through the use of information technology to achieve significant improvements in quality, performance and productivity. (SLACK, et al, 2004,696),( AH Mohammed, CAB Taib, SSR Nadarajan,(2016,15).

The researchers believe that re-organization of production facilities can be defined as the re-design processes, whether in administrative or in production. In this process, the return includes the return from the beginning of the production process to the customer. It is consistent with this definition ()

The essential elements of re-organization of production facilities operations were the following table:

Table (1)

Basic elements of re-organization of production facilities

|  |  |
| --- | --- |
| Item  | Description |
| Critical Operations | Focus on restructuring core processes |
| Strong leadership | Senior executives must have the power to re-organization of production facilities and may show resistance to change dramatically. |
| Cross-functional teams | Consists of members who are affected by the change of process, and are assigned to re-organization of production facilities that the teams of self-management and empowerment are a basic rule and not an exception. |
| Information Technology | Is the enabling factor for process engineering and most re-organization of production facilities is about the flow of information. |
| Philosophy of White Regulations | Re-organization of production facilities requires the philosophy of white regulations starting with the way the customer wants to deal with the plant, and here the internal work team begins to identify the objectives of the customers. |
| Process analysis | The staff should understand the current process, what factors influence it and what parts are involved throughout the organization. |

Source: Prepared by researchers based on

Hazar & rander & Munson, 2017, operation management Sustainability and Supply Chain, Pearson Education, Inc. or its affiliates, 750

**Second: Re-organization of production facilities stages:**

There should be a pre-plan, steps and phases that are interrelated and consistent with each other to implement and complete process reengineering, thus achieving the objectives. There is no single approach to implementation. It depends on the nature of the industry and the extent of its conviction and the resources allocated for implementation. The need to re-organization of production facilities because it is the determining factor for the way on which the implementation of the stages will be implemented as most of the writers and researchers (Obeidi, 2005,35), (Tishuri, 2009,5), (Maniweiz, 2008,2) agreed that the re-organization of production facilities stages:

**1.** **Preparation**: It means understanding the customer's expectations, whether internally or externally, determining the current location of the process and preparing the individuals who will perform the re-organization of production facilities operations and prepare a plan for the process.

**2.** **Identification**: It means identifying customers, processes and building value-added events, mean core strategic processes.

**3.** **Vision**: It means defining the qualities, characteristics and measurable objectives of future operations that help in establishing a link between the organization's strategy and how it performs its work.

**4.** **Redesign**: After improvements in new processes the new alternative is introduced and re-organization of production facilities may require the application of IT in operations. At this stage, a demonstration of how re-organization of production facilities is carried out is where the team will eliminate old laws and procedures and will concern with the design of new processes.

**Third: The objectives of re-organization of production facilities:**

Kadhim, 2012, 1 (750: hazir & rander2017) and SLACK et al (2004,696) agree that the goals of re-organization of production facilities are as follows:

**1.** To achieve a radical change in performance: Process of the re-organization of production facilities efforts aim to achieve a radical change in performance. This is to change the method and tools of work which results in enabling employees to design and work according to customer needs and organizational objectives.

**2.** Customer focus: The process of the re-organization of production facilities aims to guide the organization to focus on customers by identifying their needs and to fulfill their desires so that the processes are reconstructed to achieve this purpose.

**3.** Speed: The process of the re-organization of production facilities aims to enable the organization to do its work at high speed by providing the information needed to make decisions and facilitate the process of obtaining them.

**4.** Quality: The process of the re-organization of production facilities aims the improving the quality of the goods and services provided to suit the needs and wishes of customers (AH Mohammed, CAB Taib,S Nadarajan,(2016,141).

**5.** Cost reduction: The Process of the re-organization of production facilities aims to reduce costs by eliminating unnecessary processes and focusing on value-added processes.

**6.** Superiority to competitors: The Process of the re-organization of production facilities aims to help the organization to excel at competing organizations that may not be difficult to achieve but are challenging to beat. It may not be possible to imitate or disappear the motivation for change. Through improved utilization of available resources, rationalization of operations and better terms of sale.

**The third approach**

Conceptual Framework for Technical Innovation

 First: The notion of creativity and technical innovation.

Creativity is a sophisticated form of human activity. Since the 1950s, it has become an important problem of scientific research in many countries. After mechanization was solved in the context of the contemporary scientific-technological revolution, the demand for creative activity increased (Alaa Aljalely, Manal Alsammak (2019,430).

 Scientific progress cannot be achieved without the development of creative abilities in man. Hassan and Al-Naimi (109,2005) explain creativity as introducing something new or making a difference in the existing component.

 (Jalal, 2012, 6) defined creativity as a response to environmental change or as a means of bringing about change in the organization.

In the view of Rahim and Salman, 2005, 75, technical innovation is a process that requires cooperation and coordination between a number of overlapping activities in the organization. To adopt new ideas and technical developments through the adoption of practical and structured methods to deliver new goods and services that make them more competitive and achieve their goals of survival and growth. ( Al-Rawi, 2007, 96) Explained that technical innovation involves the introduction of a new product, the development of an existing product, the introduction of new elements of a production or the development of the current process. Ahmed (2009, 201) pointed to technical innovation from an economic input as a shift in manufacture through a constant substitution of new mediated delivery to deliver something better, resulting in profit generation and thus the growth of the national economy. ( Ismaiel and Al-Taweel, , 2010, 63) and, ( Ritzman,2017,235) &Krajewski) agreed that technical innovation means the process by which a company can use its resources to introduce new products or use modern methods to satisfy the needs and desires of customers.

The researchers believe that technical innovation includes the introduction of a new product and the development of an existing product through the use of modern techniques and methods in the formation of new products to obtain a competitive advantage.

**Second:** Thesignificanceof technical innovation:

Creativity has become familiar among the writers and researchers, which is focused on most of the tools of companies because of the advantages of several in terms of providing a new product to customers according to their needs and desires change. Chase & aquilano, 1995: 82). The importance of technical innovation is highlighted by the following:

**1.** Global shifts and changes towards a free economy based on customer expectations.

**2.** To Increase the capacity of the factory to compete with companies through:

**A.** Speeding ​​in introducing new products and changing the production process.

**B.** To reduce the cost of manufacturing and capital through innovation in the process.

**3**. To create the appropriate climate that enables the laboratory to be able to provide and develop new products and processes to satisfy the needs and desires of customers in the market.

**4.** To effect on customer tastes easy due to diversity in media programs.

**5.** To Increase communication efficiency.

**6.** To achieve the objectives of the plant strategy in excellence, survival and growth.

**7.** The factory's success is great and can be of benefit to the market.

**8.** To Increase the safety of the work environment and reduce risk.

**9**. To improve the productivity of the laboratory and that to achieve efficiency and effectiveness in the performance and use of resources economically.

**10.** To Improve quality by reducing the percentage of damage, exhaust, defective and rejected.

**11.** To improve the image of the plant and make its position acceptable to customers.

**12**. To lack of resources and expertise, which increases the need for creativity to meet the needs.

**13**. To Promote and activate the performance of the laboratory in general.

**Third: the stages of technical innovation**

There are several models proposed by the writers and researchers on the stages and steps of the process of creativity, as they differ from each other to varying degrees. The following is an explanation of some of the views of the authors (Rahim and Suleiman, 2005, 78) identified that the steps and stages of technological innovation can be represented by:

**1.** Develop the concept. 2. Planning creativity (product). 3. Product and process engineering. 4. Experimental production. 5. Commercial marketing.

Thom (1990,185) defined technological innovation steps as follows:

1. Research and development information. 2. Preparation for creativity. 3. Creativity calculations 4. Collaborate with customers and processors within the same field. 5. Organization of the project. 6. Marketing creativity.

 (Jalal, 11,2012) pointed out that it is possible to limit the stages of technical innovation in the following points:

1. Need to solve a problem. 2. Gather information. 3. Think about the issue. 4. Visualize solutions. 5. Solutions (experimental proof). 6. Implementation of ideas.

 Al-Rawi, 98,2007, stated that the stages of technological innovation are:

1. Generate ideas. 2. Embrace. 3. Feasibility study. 4. Preparation and implementation.

5. Evaluation of results and feedback.

 The following is a simplified explanation of each stage of the process of technical innovation as most researchers agreed that these stages were represented by the following:

**1.** **Generating ideas**: At this stage, ideas are generated for the creative process of the new product or the new process and their evolution. And the sources of these ideas are multiple may be from within the plant of R & D centers or external and includes social and economic changes and cultural and customers and competitors. The laboratory is supposed to collect information from the environment and promote contacts with individuals and companies that have a relationship in stimulating creativity. (Ahmed Al-Barawi, 10,2012).

**2.** **Embrace**: At this stage, the interaction and its aftermath are intertwined, in which the poetic and reflexive factors of the individual are intertwined in his daily work while his mind travels in the search for information. Here there are largely voluntary and spontaneous attempts to grasp the reality of the problem or the subject of the research and the stage of generating possible solutions. In other words, solve the problem by intuition and intuition. (Narrator, 21,2005).

**3. Feasibility:** At this stage, a study is carried out on the ideas that have been selected by determining the expected costs, as well as identifying the advantages and benefits that the laboratory can achieve when applying these ideas. (Narrator, 99,2007).

**4. Preparation and implementation:** At this stage, the creative idea is chosen and transferred to work and implementation, and is often implemented through the formation of a team to overcome the limited capabilities of individuals, whether in time or skill. The necessary inputs are provided to implement the creative process. ).

**5. Evaluation of results and feedback:** There must be an evaluation of the results and there is continuous feedback to ensure the success of the innovation and achieve the desired results. The input may be from within through in-house activities or may be external to the market and customers, and there is a continuous assessment of creativity to ensure that it meets specific needs and achieves goals (Al-Rawi, 22,2005).

**The fourth approach**

The practical side (field)

The first chapter: Description of the research sample and the individuals who were searched

**A. Definition of the research community and the reasons for its selection**:

The identification of the study community is one of the pillars on which the success or failure of a field study depends. Within this definition, the study variables,

And its objectives are clear and has chosen the General Company for the manufacture of ready-made clothing plant ready-made in Nineveh field for the current research, and perhaps the most important reasons for selecting the following:

1. The plant continues to produce in spite of the conditions experienced by the country and enjoy the expertise and skills sufficient to continue production.

2. The plant owns markets for its products in Nineveh province and other governorates as well as entering the products of this lab foreign market.

The following is an overview of the company for the manufacture of ready-made clothes / ready-made garments plant.

The plant was established in 1983 in Al-Mansour area in the city of Mosul. It was one of the most important products of the plant producing children's clothes from ages 1 to 6. Then the plant was developed with new lines for producing women's and men's clothing.

 In addition to the product of the cover of cars , men's clothes and other products, the products of the laboratory have been well accepted by the customer.

**B: A description of the individuals who were searched, and tables (2,3,4) show the most important characteristics of these individuals in the plant under a search**

           1. Gender 2. Age groups 3. Educational attainment

Table (1)

Describe the individuals who were searched in the plant, the research sample in terms of sex,

|  |  |
| --- | --- |
| **Female**  | **Male**  |
| **%** | **No.** | **%** | **No.** |
| 50 |  15  | 50 | 15 |

Reference: Prepared by researchers based on the results of the electronic calculator

Table (2)

Describe the individuals who were searched in the plant , the research sample in terms of

Age groups

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **56 and above** | **46-56** | **46-36** | **26-36** | **25 and below** |
| % | No. | % | No. | % | No. | % | No. | % | No. |
| 13.3 | 4 | 16.6  | 5 | 20 | 6 | 33.3 | 10 | 16.6  | 5 |

Reference: Prepared by researchers based on the results of the electronic calculator

Table (3)

Describe the individuals who were searched in the plant, the research sample in terms of Academic attainment,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Master | Higher Diploma | Bachelor | Technical Diploma (Institute) | High school and below |
| % | No. | % | No. | % | No. | % | No. | % | No. |
| 6.7 | 2 | 0 | 0 | 56.6 | 17 | 6.7 | 2 | 30 | 9 |

Reference: Prepared by researchers based on the results of the electronic calculator

**The fifth approach**

Describe, diagnose and test the search variables model

The research methodology requires determining the function of the variables on which the research model was based. To achieve this goal, these variables were classified to deal with the initial analysis of the data related to the research variables. The researchers used the SPSS program to infer the frequencies, percentages, arithmetic and standard deviations of each dimension. The dimensions of the research and its variables, as shown in Table (4)

First: Description and diagnosis of re-organization of production facilities stages:

63.4% of the individuals searched indicated that the re-organization of production facilities processes in the organization contribute to solving some of their problems. This confirms the values ​​of the arithmetic mean and the standard deviation of the variable x1, respectively (3.40) (1.32).

 53.3% of the individuals who were searched indicated that the management of the organization should be involved in the re-organization of production facilities operations. This confirms the values ​​of the mean and the standard deviation of variance x2 and 3.23 (1.22) respectively.

 (60.0%) of the individuals who were searched indicated that their company responded quickly to requests through re-organization of production facilities, supported by the mean values ​​and the standard deviation of the x3 variable, respectively (3.36) (1.15).

 (53.4%) of respondents agree that the organization measures the performance of its operations by means of fault ratios and defects. This confirms the values ​​of the mean and the standard deviation of the variable x4, respectively (3.20) (1.18).

(53.3%) of the individuals found that the management of the organization is of great importance for the activities affecting the nature of the employees. This is confirmed by the values ​​of the mean and the standard deviation of the variable x5 (3.06) (1.22), respectively.

(60.4%) of the individuals showed that the vision of the process focuses on linking the organization's strategy with its business model. This is supported by the values ​​of the arithmetic mean and the standard deviation of the x6 variable, respectively (3.50) (1.07).

 56.7% of the individuals indicated that the management of the organization had future visions for operations that needed to be re-organized. This confirms the values ​​of the arithmetic mean and the standard deviation of the x7 variable (3.33) (1.15), respectively.

 (53.3%) of the individuals agreed that the organization's management will provide technical and social solutions for re-organization of production facilities operations, supported by the values ​​of the arithmetic mean and the standard deviation of x8, respectively (3.13) (1.35).

63.3% of the individuals founded that good design in the organization was selected by examining the available alternatives. This confirms the values ​​of the arithmetic mean and the standard deviation of the variable x9, respectively (3.40) (1.24).

 66.6% of the individuals indicated that the management of the organization should overcome all errors and deviations that occur during the re-engineering process. This supports the values ​​of the mean and the standard deviation of the x10 variable, respectively (3.36) (1.32).

(70.0%) of the individuals founded that the laboratory is seeking to produce new products that have not been produced. This confirms that the value of the arithmetic mean and the standard deviation of variable x11, respectively (3.56) (1.38)

(53.3%) of the individuals founded that senior management consistently supported employees by introducing training courses, which supported the value of the arithmetic mean and the standard deviation of variable x12, respectively (3.30) (1.17).

Table (4) Description and diagnosis of the variables of re-organization of production facilities processes

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Stages of re-organization of production facilities processes | Variable  | Agreed/5 | Agreed/4 | Neutral /3 | I do not agree/2 | I do not agree/1 | -X | STD |
| No. | % | No. | % | No. | % | No. | % | No. | % |
| X1 | 5  | 16.7 | 14  | 46.7 | 4  | 13.3 |  2  | 6.7 | 5  | 16.7 | 3.400 | 1.3287 |
| X2 |  3  | 10.0 | 13  | 43.3 | 6  | 20.0 | 4  | 13.3 | 4  | 13.3 | 3.233 | 1.2228 |
| X3 | 3  | 10.0 | 15  | 50.0 | 5  | 16.7 | 4  | 13.3 | 3  | 10.0 | 3.366 | 1.1591 |
| X4 | 2  | 6.7 | 14  | 46.7 | 6  | 20.0 | 4  | 13.3 | 4  | 13.3 | 3.200 | 1.1861 |
| X5 | 1  | 3.3 | 15  | 50.0 | 4  | 13.3 | 5  | 16.7 | 5  | 16.7 | 3.066 | 1.2299 |
| X6 | 4  | 13.3 | 14  | 46.7 | 7  | 23.3 | 3  | 10.0 | 2  | 6.7 | 3.500 | 1.0747 |
| X7 | 3  | 10.0 | 14  | 46.7 | 6  | 20.0 | 4  | 13.3 | 3  | 10.0 | 3.333 | 1.1547 |
| X8 | 4  | 13.3 | 12  | 40.0 | 3  | 10.0 | 6  | 20.0 | 5  | 16.7 | 3.133 | 1.3578 |
| X9  | 4  | 13.3 | 15  | 50.0 | 4  | 13.3 | 3  | 10.0 | 4  | 13.3 | 3.400 | 1.2484 |
| X10 | 4  | 13.3 | 16  | 53.3 | 2  | 6.7 | 3  | 10.0 | 5  | 16.7 | 3.366 | 1.3257 |

Reference: Prepared by researchers based on the results of the electronic calculator

**Second: Product Innovation:** 70.0% of the respondents indicated that the plant is developing its products based on market studies. This confirms the values ​​of the mean and the standard deviation of variable x13, respectively (3.66) (1.12).

70.0% of the individuals founded that the plant has specialized expertise in the development of existing products to follow the development process. This is supported by the values ​​of the arithmetic mean and the standard deviation of variable x14 and adult (3.73) (1.0) respectively.

(60.0%) of the individuals agreed that the plant offers new products in order to gain a high market share and to achieve competitive advantages in the market. This confirms the values ​​of the mean and the standard deviation of variable x15, respectively (3.46) (1.22)

66.7% of the individuals indicateded that the lab cooperates with external expertise and consultancy in order to provide new products. This confirms the values ​​of the mean and the standard deviation of x16 and adult (3.56) (1.40), respectively.

Table (5) Description and diagnosis of product innovation variables

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1.38174** | **3.5667** | **13.3** | **4** | **13.3** | **4** | **3.3** | **1** | **43.3** | **13** | **26.7** | **8** | **X11** |
| **1.17884** | **3.3000** | **6.7** | **2** | **23.3** | **7** | **16.7** | **5** | **40.0** | **12** | **13.3** | **4** | **X12** |
| **1.12444** | **3.6667** | **6.7** | **2** | **10.0** | **3** | **13.3** | **4** | **50.0** | **15** | **20.0** | **6** | **X13** |
| **1.04826** | **3.7333** | **6.7** | **2** | **3.3** | **1** | **20.0** | **6** | **50.0** | **15** | **20.0** | **6** | **X14** |
| **1.22428** | **3.4667** | **6.7** | **2** | **20.0** | **6** | **13.3** | **4** | **40.0** | **12** | **20.0** | **6** | **X15** |

Reference: Prepared by researchers based on the results of the electronic calculator

**Third:** Creativity of the Process: 56.6% of the individuals agreed that the plant follows the scientific methods for the design and improvement of computer aided processes. This is confirmed by the values ​​of the arithmetic mean and the standard deviation of variable x17, respectively (3.46) (1.30)

(83.3%) of individuals indicated that their company aims to increase productivity and efficiency through improved processes. This supports the values ​​of the mean and the standard deviation of the variable x18, respectively (3.93) (0.94)

 86.7% of individuals indicated that their company seeks to improve production processes based on the available plant capabilities. This confirms the values ​​of the mean and the standard deviation of variable x19 respectively (4.10) (0.84(

76.7% of the individuals argued that the lab is designing new processes in light of the requirements of the new product design. This supports the values ​​of the mean and the standard deviation of variable x20 respectively (3.73) (1.04)

63.3% of the individuals indicated that the lab is designing new operations for the purpose of producing new products. This confirms the values ​​of the mean and the standard deviation of variable x21 respectively (3.63) (1.09)

73.3% of the individuals agreed that the production engineers seek to improve the production processes in the laboratory. This confirms the values ​​of the mean and the standard deviation of x22 and adult (3.76) (1.10), respectively.

Table (6) Description and diagnosis of process creation variables

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1.40647** | **3.5667** | **13.3** | **4**  | **13.3** | **4**  | **6.7** | **2**  | **36.7** | **11**  | **30.0** | **9**  | **X16** |
| **1.30604** | **3.4667** | **13.3** |  **4**  | **6.7** |  **2**  | **23.3** |  **7**  | **33.3** | **10**  | **23.3** | **7**  | **X17** |
| **0.94443** | **3.9333** | **3.3** | **1**  | **6.7** |  **2** | **6.7** |  **2**  | **60.0** |  **18**  | **23.3** |  **7** | **X18** |
| **0.84486** | **4.1000** | **3.3** |  **1**  |  **-** |  **-** | **10.0** |  **3**  | **56.7** |  **17**  | **30.0** |  **9**  | **X19** |
| **1.04826** | **3.7333** | **6.7** |  **2**  | **6.7** |  **2**  | **10.0** |  **3**  | **60.0** | **18**  | **16.7** | **5**  | **X20** |
| **1.09807** | **3.6333** | **6.7** |  **2**  | **6.7** |  **2**  | **23.3** |  **7**  | **43.3** |  **13**  | **20.0** | **6**  | **X21** |
| **1.10433** | **3.7667** | **6.7** |  **2**  | **6.7** | **2**  | **13.3** | **4**  | **50.0** | **15**  | **23.3** | **7**  | **X22** |

Reference: Prepared by researchers based on the results of the electronic calculator

**Second: Analysis of correlation between search variables**:

Table (4) shows that there is a significant positive correlation between re-organization of production facilities and technical innovation combined. The total index of correlation coefficient (\* 0.91.(Thus, the first major hypothesis was achieved at the level of this plant.

Table (4)

Results of the total correlation relationship between the research variables at the level of the studied plant.

|  |  |
| --- | --- |
| Stages of re-organization of production facilities  | Independent variabledependent variable |
| 0.91\* | Technical Creativity |

Table Preparation of researchers based on the results of electronic calculator (SPSS). N = 30 P <0.0 5

Fourth: Analyzing the relationship of the effect between the variables of research

The results of the analysis indicate that there is a significant positive effect (for re-organization of production facilities) which represents a separate variable in (technical creation) which represents an approved variable, in the plant in question.

Table (5)

The effect of the re-organization of production facilities stages combined with technical innovation at the level of the plant being studied

|  |  |  |  |
| --- | --- | --- | --- |
| F | R2 | re-organization of production facilities stages | Independent variabledependent variable |
| Tabular  | Calculated | B0 | B1 |
| 4.1960  | 132.810 | 0.826 | 0.909  |  0.94411.524)) | Technical Creativity |

Table Preparation of researchers based on the results of electronic calculator (SPSS)

Denotes the calculated t value N = 30 P <0.0 5 df = (1, 28)

In Table (5) of the results of the regression analysis, a significant effect of the re-organization of production facilities as the independent variable in technical innovation was found to be the combined variable. The calculated value of (F) is 132.810 and is higher than the tabular value of (4.1960) , 28) and R2 (0.826). This means that 82.6% of the differences in technical innovation are due to re-organization of production facilities, and the rest is due to random variables that cannot be controlled or are not included in the regression model.

The value of (T) calculated (11,524), which is a significant value and greater than its tabular value of (1.699) at a significant level (0.05) and the degree of freedom (1, 28).

**Table (6)**

**Effect of the results of the research variables at the level of the plant**

|  |  |  |  |
| --- | --- | --- | --- |
| F | R2 | re-organization of production facilities stages | Independent variabledependent variable |
| Tabular  | Calculated | B0 | B1 |
| 2.368 | 119.132 | 0.758 | 0. 971 | 0.898(10. 915) | Technical Creativity |

Table Preparation of researchers based on the results of electronic calculator (SPSS)

Denotes the calculated t value N = 30 P <0.0 5 df = (1, 28)

In Table (6), the results of the regression analysis show a significant effect of the re-organization of production facilities stages as the independent variable in the product innovation as the combined variable, with the calculated value of (119.132), which is higher than the total value of (2.368) 1.38). The coefficient of determination (R2) is 0.758. This means that 25% of the differences explained in the re-organization of production facilities stages are due to the effect of product creativity. The rest is due to random variables that are uncontrollable or not included in the regression model.

The value of (T) was calculated as (10) 915, which is a significant value and greater than its tabular value of (1.671) at a significant level (0.05) and the degree of freedom (1.28) The second major hypothesis has been achieved.

**The sixth approach**

**Conclusions and recommendations**

**First: Conclusions**

1. The views of the writers and researchers differed on the concept of re-organization of production facilities but the difference did not change by being reorganized, arranged, redesigned, and made radical and fundamental modifications to the processes.

2. There is a degree of agreement among a number of writers in the field of production management, operations and technology management on the types of technical innovation are: product innovation and creative production process.

3. The subject of technical innovation has received great attention and growing attention by writers and researchers in the field of operations management and marketing management because of its importance in the possibility of introducing a new product, developing an existing product, introducing a new process or developing an existing process.

4. The value of the coefficient of determination (0.826) is a high value relative to the R2 values ​​imposed and indicates the efficiency of the model connecting the two variables, which means that the re-organization of production facilities variable explains the technical innovation variance by 82%.

5. The correlation coefficient (0.91) was a sign of the strength of the moral correlation between re-organization of production facilities and technical innovation.

6. The plant under investigation has achieved a number of innovations in product innovation such as introducing new products and improving existing products, as well as designing some new processes and improving existing processes by using them to re-organization of production facilities processes.

**Second: Recommendations**

1. Modern industrial organizations adopted technical innovation as it contributes to the development of the new product or service marketed by the organization.

2. The management of the plant should increase the interest in the concept of re-organization of production facilities as well as the concept and importance of customer satisfaction for the contribution and promotion of survival and plant growth in the competitive markets.

3 - The plant should be interested in customer suggestions and try to meet these proposals through translation to specifications of the new product to meet the needs and desires of customers.

4. The necessity of cooperation between the industrial wanted plant and Iraqi universities and institutes in the field of holding training courses and joint scientific conferences and benefiting from the researches carried out in the fields of technical innovation.

5. The plant should use the modern means of communication such as the Internet and benefit from access to technology such as the use of CAD system and access to the products of competitors and gain experience to develop the products in their companies.

6. The management of the wanted plant has shown great interest in R & D departments and giving it the necessary importance in order to provide new products and improve the existing products to suit the requirements of customers.

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