

The impact of using the virtual reality technology on improving production performance in garment factories Egyptian

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Abstract

This research presents a model for solving the problem of designing production lines in ready-made garment factories where a program using modern technology and the programming language JAVA to achieve an ideal program that designs the production lines. The design of production lines in the garment factories needs a lot of time and money The clothing industry means money where the less time the less the cost and in this research we solve this problem, The main objective of planning, monitoring or controlling production is to deliver products to customers or to store them in the warehouse according to the standard schedule, so every activity should be planned in the manufacturing cycle ,Production planning and control are essentially the same, Because locating machines and workers, determining the method of supplying them with raw materials, and transporting finished products is a problem that all industrial establishments are trying to solve.This is known as the problem of internal planning, which is not limited to industrial establishments alone, Therefore, it is common in most establishments and is difficult to avoid. The solution may be available that the problem remains, often the internal planning of the facility needs to be constantly reviewed, and in order to maintain the stable state of the production system, and to maintain its efficiency, effectiveness or increase.

Most industrial establishments are currently moving towards the application of advanced manufacturing systems due to the many advantages and benefits expected by these systems, especially in light of the continuous development in the modern industrial environment and the prevailing competitive environment, Advanced manufacturing systems mean those systems that use a range of machines, equipment, devices and programs in addition to the application of some modern philosophies and approaches to the development and improvement of manufacturing systems, and through the use of advanced technical methods in manufacturing can achieve the concept of industrial excellence, which includes an

integrated series of work from the supply and supply Raw materials to deliver products to customers, and therefore the application of advanced techniques in manufacturing is inevitable in order to achieve industrial excellence and achieve a head start in competition and ensure the continuity of the facility.

through the use of modern technology in terms of drawing the production line in reality and knowledge of the efficiency of the line before implementation in real reality Also in this research we mention the forms of production systems in ready-made garment factories and look forward to the modern systems of manufacturing and the modern methods in drawing production lines and training the workers on the production stages so that we can raise their performance and design and arrange the production lines is a basic factor as it helps to reduce the time used in the production process And increase in the quantity of production, and in this research we study the case of Vai factory production of men's shirt, we do this as the factory arranges the production line by traditional methods, where the model changes, the factory needs to rearrange and design the production line to suit the requirements of the model In the traditional ways, time will take place and the cost will increase. The design may be inappropriate for the current situation, but with the use of modern technology, the "virtual reality" in the design and arrangement of the production line and the consideration of indicators that lead to increased efficiency and the use of productivity standards that balance production lines The efficiency of the workers' performance is increased through training in a variety of production stages. Modern manufacturing systems are used, including the use of automated handling systems and the production line in the virtual reality to see the efficiency of the line before starting the production process The purpose of the program is to have a balanced production line with no problems and to have less production time, high efficiency and low cost. **In this research, we take several steps, such as:**

Analysis:

A study was carried out on the status of the factory for the men's shirt through which the program was applied and then the shortcomings of the current system were identified.

During this study, all the information and data related to the factory, especially the operating halls, were collected and all the details of these halls in the men's shirt factory were identified and problems were identified in the production halls and how to arrange these halls through:

- Access to all data and information used in the work inside the operating halls and know all the details related to the organization of the production line.
- Study the area of the hall and know the places of entry and exit and determine the means of lighting and electrical connections and occupational health and safety factors.
- Identify the data of workers in the operating halls and the degree and skill of each worker in different stages.
- Identify the data of workers in the operating halls and the degree and skill of each worker in different stages.
- Know the data of the machines in terms of (name of the machine - life span - code of each machine - the date of operation of the machine - the failures that occur to the machine - maintenance of each machine)
- Data on production (type of product being implemented - production stages through which the product passes - the standard time of the product and the actual time of the worker - the

machines used in each stage and its number - the number of hours worked within the factory - the efficiency of workers - the amount of production required at a given time - method Product operation)

Goal Setting:

After identifying the problems in the production halls in the factory, a set of requirements to be met in the proposed program that draws the production lines

1- TECHNICAL DRAWING STORAGE FOR ALL PRODUCTS WE PLANT

2 - storage of all the areas that we need when drawing the production line (space operating hall - space taken by each machine worker).

3 - storage of all data and information on the machines that perform different stages of production.

4- Identify the different stages of production for all products stored on the program.

5 - storage of record time for each stage of production.

6- The program should contain the names of the employees and the stage of each worker as well as the additional stage that he can perform.

7 - Identify the efficiency of the worker stage and the standard time of the stage and the actual time.

8- Determine the means of handling.

9 - the possibility of giving reports of all steps that occur in the program and deal with other programs.

10- Give a drawing through the program to the production line of the product being executed.

11- Determine the efficiency of the production process through the program.

Design for the proposed production line:

The goal is to draw the men's shirt production line using the "virtual reality" program, apply the modern manufacturing systems, know the efficiency of the line and reduce the run time, as well as before starting the production process.

Evaluation of the proposed system and its evaluation through the results:

The results are illustrated by applying the program in one of the factories ready-made garments that manufacture the men's shirt and compare the current situation of the factory with the situation after the implementation of the program on the same sample and compare the results and find out how the design of production lines can affect the operating time and how to design lines Production in the virtual reality and know the results before **applying in real reality and come to:**

1- The effectiveness of the program in developing the production performance level in the garment factories in Egypt.

2- The effectiveness of the program in supplying all data and information related to the workers in the factory.

3 - the effectiveness of the program in determining the efficiency of workers and know the stage performed by each worker.

4 - the effectiveness of the program by supplying all the data on the machines within the production lines and know the code of each machine and its area and stage.

- 5- Effectiveness of the program in illustrating a schematic form for implementing the product (TECHNICAL DRAWING)
- 6 - The effectiveness of the program in the knowledge of all stages of the product that we draw a production line.
- 7- The effectiveness of the program in obtaining all the reports related to the production lines whether they are in the form of the production line, production stages, workers in the line, existing machines, types and number.
- 8- The effectiveness of the program in arranging and organizing the production line with all the details and the workers' accommodation in the stages and imagine the line in the virtual reality and know the time of implementation of the product before starting production.
9. The effectiveness of the program in determining the time required for the production process before starting production.
10. The effectiveness of the program in clarifying the time of each stage.
11. Effectiveness of the program in determining the efficiency of each worker at different stages.
- 12- The effectiveness of the program in clarifying the logical sequence of the stages of production of the product.
- 13 - the effectiveness of the program in the adjustment in the production line as we want to save time and increase the amount of production, before exposure to the actual production process.

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