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THE ROLE OF A CLEAN MATERIAL REQUIREMENTS PLANNING (MRP) SYSTEM IN REDUCING ENVIRONMENTAL WASTE (EXPLORATORY STUDY IN KUT TEXTILE AND KNITTING FACTORY)

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ABSTRACT

The aim of this research is to shed light on the concept of the clean MRP system in the industrial organizations operating in Iraq, including the Kut textile and knitting factory of the Ministry of Industry and Minerals, and to correct the views on the importance of MRP by presenting the clean MRP system, which is a tool of sub-systems aimed at operational planning, identifying the concept of environmental waste, defining its dimensions, and the commitment of the factory management to its indicators. The exploratory study methodology was adopted for research and the questionnaire tool was used in the study method to analyze the opinions of the research sample regarding the clean (MRP). Through the use of some statistical methods in the analysis. The research hypotheses were tested, which stated that there is no statistically significant correlation and the absence of a significant effect between the material needs planning system and environmental waste dimensions. The most prominent conclusions that were reached are the rejection of null hypotheses and the acceptance of alternative hypotheses regarding the existence of a statistically significant correlation between the clean (MRP) system and the dimensions of environmental waste. Among the most prominent recommendations Research, The factory management must identify strengths and weaknesses in its activity in order to make great use of modern production control systems, including the clean MRP system, and identify weaknesses and address them in order to reach optimal performance.

Keywords: The Clean (Mrp) System, Environmental Waste, Waste Management Planning.

1. INTRODUCTION

The issue of the clean material requirements planning system is one of the modern topics that have received attention and attention in the business world, especially after the challenges that the world has witnessed, including the development of information technology. This made it imperative for industrial companies to face these challenges and improve their production processes through the use of modern production control systems, including the clean MRP system, in order to reduce the

Vol. 6, No. 01; 2023
ISSN: 2581-4664

amount of waste during production processes. The research included four topics devoted. The first topic of the study methodology and previous studies. The second topic was devoted to the theoretical side, which included presenting a conceptual framework for the traditional and clean MRP system, the advantages and characteristics of this system, and the concept of environmental waste and its dimensions. As for the third topic, it included the practical side, in which the responses of the research sample members were presented regarding the items of the questionnaire tool and testing the research hypotheses. The fourth topic was devoted to the most important conclusions and recommendations.

2.RESEARCH METHODOLOGY

2.1 The research problem

Environmental concern has previously focused on the design activities of the organization and has ignored the activities of the state and industrial planning. As environmental issues become increasingly important to production managers, workers, researchers, investors, and lawmakers, these concerns come under focus by all private government agencies.

Waste and environmental pollution have become one of the biggest problems facing the industrial world, and these problems have caused a major imbalance in the environmental balance. The great contradiction is that production managers did not respond to great pressures by adopting environmentally friendly manufacturing systems, despite the desired government legislation, penalties and repeated incentives for manufacturing organizations in exchange for their dealings with the environment. The main problem of the research is that most of the solutions presented by the companies are short-term solutions that focus on how to deal with pollution after it has occurred and are not proactive solutions that focus on the root causes of pollution through the integration of environmental concerns with material planning activities and determining the flow of waste resulting in production processes.

2.2.The Importance Of Research

The importance of research stems from the importance of preserving the environment and taking responsibility for reducing waste, pollution and gas emissions. The clean MRP system also solves the problem of reducing the environmental impact when managing industrial waste by reducing environmental problems. The importance of the study also lies in the small number of studies related to environmental trends related to scheduling activities and manufacturing operations planning.

2.3 Research Objectives

1- Knowing the clean MRP system and identifying the environmental benefits it achieves.
2- Correcting views on the importance of MRP by introducing a clean MRP system, which is a tool targeting sub-systems of operational planning.
3- Modifying the traditional MRP system in order to include environmental considerations when converting the main production schedule (MPS) into different schedules for components.
4-Linking materials planning, scheduling and execution tools through the integration of the clean MRP system.
5- Identifying the concept of environmental waste and defining its dimensions and the commitment of the researched company to its indicators.

Vol. 6, No. 01; 2023
ISSN: 2581-4664

2.4 Research Hypotheses

Null hypothesis:

1-There is no statistically significant correlation between the clean MRP system and environmental waste dimensions.

Alternative hypothesis:

There is a statistically significant correlation between a clean MRP system and environmental waste dimensions

2-There is no statistically significant effect relationship between the clean MRP system and environmental waste dimensions.

Alternative hypothesis:

There is a statistically significant effect relationship between the clean MRP system and environmental waste dimensions

2.5 Data Collection Methods

A- Theoretical side: Reliance was made on the available literature related to the subject of the research, which is (books, theses, studies and research) Arabic and foreign.

B- The applied side: the questionnaire was adopted mainly in measuring the research variables, which is for the independent variable the MRP system on a study (Al-Khatib and Hussein, 2010), while the dependent variable environmental waste was relied on a study (Hassan, 2014).

2.6 The Research community and sample

The textile factory in Kut Governorate affiliated to the Ministry of Industry and Minerals was selected as a community for research because of its important role in meeting the needs of the different members of society.

As for the research sample, it was represented by managers, engineers, heads of departments and units in the factory under study, and 40 statistical items were selected.

2.7Statistical methods

The following statistical methods were adopted in the applied side of the research, which are the iterations, the arithmetic mean, and the standard deviation, in addition to the measure of relative importance, based on the ready-made statistical program (SPSS.V.10). In addition to the Pearson correlation coefficient, the simple regression coefficient, and the analysis of variance.

Second: previous studies

1-Al-Khatib and Al-Obaidi Study: 2010 (the reality of applying the MRP system and its impact on organizational performance)

The aim of the study was to prepare a theoretical framework for the Material Requirements Planning (MRP) system and its application in order to improve organizational performance. One of the most prominent conclusions of the study is that the use of the material needs planning system by the researched company will allow it to provide the necessary materials for production before the need arises. The most prominent recommendations of the study is the need to introduce modern systems in planning and controlling production and stocks, including the system for planning the needs of materials to Iraqi industrial companies and identifying strengths and weaknesses in their level of performance.

Vol. 6, No. 01; 2023
ISSN: 2581-4664

2-Hassan study: 2014 (relationship and impact of environmental performance with financial performance).
The study aimed to identify the behavior of the Iraqi consumer towards organizations and products with environmental orientations. The study concluded that there is no strong relationship between environmental performance and financial performance in the companies surveyed. The study recommended the need for the companies surveyed to adopt strategies to provide environmentally friendly products and promote them in order to urge the Iraqi consumer to use them.

3-Hammoud Study: 2017 (The Impact of MRP Material Requirements Planning on Competitive Advantage)
The aim of the study is to identify the impact of the MRP material requirements planning system on the competitive advantage in the Jordanian Hikma Pharmaceutical Company. The study concluded that there is a medium level of interest in achieving competitive advantage in the researched company. The most important recommendations are the need to find mechanisms that help Jordanian companies to share market information with customers.

4-Khushim Study: 2018 (The Impact of MRP Material Requirements Planning Application in Supply Chain Management)
The objective of the study is to study and analyze the real causes of the unprogrammed demand problem and the problems related to the stock of the researched company. The most prominent conclusions of the study is that the use of the material needs planning system has a significant impact on the continuity of work without interruptions, including gaining lost time in favor of production, which will provide significant financial revenues for the company. Also, the use of the MRP system reduces the amount of investment in inventory and maintains a high level of customer service. The study recommended expanding the use of the MRP system to enter daily data on the progress of the production process, which facilitates the work of production and operations management.

3.THE THEORETICAL SIDE

3.1 the conceptual framework

The concept of MRP system

The concept of the material requirements planning system is defined as a planning tool based on the main production scheduling to determine the needs of raw materials and the main and subsidiary parts. As it is used in production, distribution and scheduling of reinforcing the quantity of inventory (Krajwski, et.al, 2010:725). It has also been defined as a method for managing industrial inventory with the aim of reducing the level of investment in it to the extent that the organization can meet the basic production scheduling requirements (Groover, 2001: 345).

MRP and the environment

Government concerns about the degradation of the natural environment have led manufacturers to re-engineer their operations to be green. Also, the recycling of materials has become commonplace, and products are designed in a way that they can be recycled after their use and end-of-life. Nevertheless, manufacturing processes often result in a number of waste materials

Vol. 6, No. 01; 2023
ISSN: 2581-4664

that need to be disposed of, and waste comes in several forms: - (Melnyk, et.al, 2001:228)
- (Flows) such as carbon monoxide, sulfur dioxide and chemical hazards associated with the processes used in the manufacture of the product.
-Materials: such as shavings of materials, gasoline and chemicals associated with certain processes.
- Packaging materials such as unusable plastic and paper materials associated with purchased products or materials.
- Scrap associated with damaged products or components that are not usable and generated from the manufacturing process.

Companies can modify their MRP systems to help track these wastes and plan how to eliminate them. The type and amount of waste associated with each material can be entered into the BOM material list by treating waste as much as possible. And when the main production schedule (MPS) for the product is developed, then reports can be developed on the amount of expected waste during the production process and the time of this waste. This process gives the organization a way to generate any official documentation required by the government in order to confirm that it is complying with environmental laws and policies. The interest in the environmental responsibility of manufacturing has increased in recent years. This interest focused mainly on the design activities of the organization. Scheduling and manufacturing planning activities have been largely ignored. quantitative and financial. (Melnyk, et.al, 2001:234).

Characteristics of an effective clean MRP system:

In order for the clean MRP to be effective, there are requirements that must be met, which are: (Melnyk, et.al, 2001:222)
1- It should be implemented as a complement (additional) to the existing MRP system. This assumption reflects managers' unwillingness to purchase a new MRP system with new waste schedules.
2-To be able to show the impact of environmental waste problems on both cost and production requirements. The user must be able to define the impact of environmental problems on costs and the amount of production required to achieve these requirements in the schedule.
3-Facing process waste (waste associated with making the product) and process waste (waste arising during equipment procedures) and product and scrap waste.
4- Defining and realizing the impact of recycling materials on production and costs.

Benefits of a clean MRP:

A successful clean MRP can give the organization a number of benefits, the most important of which are (Melnyk, et.al, 2001:238):
1- Identifies potential problems as they arise.
2- It improves waste management planning.
3-It improves the company's ability to ensure compliance with legislation and government requirements.
4-Finding official documentation of government requirements.
5-The clean MRP solves the problem of reducing the environmental impact when managing industrial waste by weakening and reducing the problems associated with the environment. The importance of this system lies in the fact that it can convert environmental impacts into financial

Vol. 6, No. 01; 2023
ISSN: 2581-4664

clauses.
6-That a clean MRP focuses on materials planning, scheduling, and execution.

3.2 Environmental waste

Waste means any activity or any cost that does not add value to the final product. The customer looks at the value that is achieved through the final product, regardless of the nature of the costs associated with its production process, which is considered a waste not only for the organization, but also for society in the case of producing products that do not meet the demand by using resources and in a way that does not suit the environment of the lean system, (Al-Nama, 2006: 22) (Slack, et. al, 2004: 526), (Heizer & Render, 2008: 653), (Stevenson, 2012: 623), and (Porter, 2011: 131) agree.
To identify eight types of wastage as follows:
1- Waste in production: It is represented by production in excess of the needs of customers.
2- Excessive production processes: It means the existence of production processes that do not add value to the product.
3- Excessive inventory: that is, storing raw materials, semi-manufactured materials, or finished products that are redundant.
4-Excessive movement: It is represented by excessive movements of the worker that do not add value to production processes.
5- Excessive transportation: that is, excessive transportation of materials between production stages, which leads to damage to the product.
6- Excessive waiting: It is the waiting time for materials during their flow between production stages, which leads to an increase in the stock under operation.
7- Excessive defectiveness: which is the resulting waste due to the low level of quality as a result of the limited quality measurement standards, which leads to an increase in quality costs.
8- Excessive knowledge: This type of waste results from not investing the workers' skills and creativity and not involving them in the decision-making process. Melnyk & Denzler explained that environmental waste is a multi-faceted concept, as the dimensions and types of waste effects are more than just the cost of disposal. Materials and these dimensions can be used to evaluate a clean MRP system (Melnyk & Denzler, 1996:119):

1- The source: - It is the first dimension of environmental waste and describes where the flow of waste appears in the production process. Waste flows have at least four primary sources: pollution, production waste, process waste, process waste, and scrap.

2- The existence of immediate storage: - After understanding where the environmental waste is, two types of outputs appear for this waste

A- Is the immediate disposal of waste such as the release of gas to the atmosphere?
B- Is it stored for successive disposal? In both cases, the organization must get rid of this waste by some means, such as re-processing, re-manufacturing, or burying it underground.

3- Disposal of materials: He is still interested in the question of what happens to the waste when the time comes to remove it. The administration should follow a set of options such as (selling and salvaging these materials, reprocessing them, and disposing of them). Usually, the administration does not interfere unless the disposal of the materials causes some violations of existing government legislation.

4- Impact: The last dimension describes the effects of environmental waste on the

Vol. 6, No. 01; 2023
ISSN: 2581-4664

organization and its operations. There are at least five forms of impacts: type (such as risk or non-risk), quantity, timing, energy and money.

When these dimensions are collected, the planning system in the organization faces 14 types of environmental waste (four types of sources * two types of immediate storage * three types of material disposal * five types of impact). Based on previous research, few organizations have information on these diverse items.

The third section is the practical aspect

First: Measuring the responses of the members of the research sample regarding the system of planning the needs of clean materials.

Table (1) shows the answers of the members of the research sample according to the variable of the system (MRP clean) as it achieved general arithmetic mean of (3.64) which is higher than (hypothetical mean)* with a standard deviation of (2.01) and reached (relative importance)** (73%)

* Hypothetical mean = substitutes total weights / scale number scores

$$= \frac{1+2+3+4+5}{5} = 3$$

**Relative importance = arithmetic average / scale scores number × 100%

Table (1) Responses of the research sample members to the system of planning the needs of clean materials

N	standard	**Strongly agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly disagree**	**Mean**	**Standard deviation**	Relative importance
	Content of phrases	Iteration	Iteration	Iteration	Iteration	Iteration			
1-	The implementation of a clean material needs planning system reduces the inventory of the last period	9	10	5	8	8	3,1	2,23	62%
2-	The implementation of a clean materials needs planning system increases the utilization of available energies	12	11	4	7	6	3,4	2,32	68%
3-	The implementation		11	8	1	10	3,25	2,22	65%

Vol. 6, No. 01; 2023
ISSN: 2581-4664

	of a clean materials needs planning system reduces the waste of raw materials	10							
4-	Implementation of a clean material needs planning system reduces production costs	14	9	9	6	2	3,67	2,02	73%
5-	Implementation of the clean material requirements planning system provides an increase in the return on investment	14	12	7	5	2	3,77	2,02	75%
6-	Implementation of the clean material requirements planning system provides an increase in the return on equity	12	12	9	5	2	3,67	2,02	73%
7-	The application of the clean materials needs planning system leads to the provision of various high quality products	15	11	8	4	2	3,82	2,3	76%
8-	Implementation of the clean material needs planning system allows to reduce the selling price	9	12	10	5	4	3,42	2,32	68%
9-	The application of the clean materials needs planning system increases the plant's ability to tunnel on promotional campaigns	14	15	8	1	2	3,95	2,51	79%

Vol. 6, No. 01; 2023
ISSN: 2581-4664

10	The implementation of a clean materials needs planning system increases the plant's ability to increase market share	16	17	4	2	1	4,07	2,63	81%
11	The application of a clean materials needs planning system increases the profit margin of the factory	19	12	5	2	2	4,1	2,65	82%
12	The implementation of a clean materials needs planning system leads to the factory gaining a competitive advantage	10	10	13	4	3	3,5	2,02	70%
	Overall average	12,83	11,83	7,5	4,16	3,7	3,64	2,01	73%

Source: Preparation of researchers based on the questionnaire form

The data of the above table indicate that the factory management pays clear attention to the application of its material needs system, the statement No. (11) obtained the highest arithmetic mean of (4.1) points out of five points with a standard deviation of (2.65) points, as (82%) of the members of the research sample believe that the application of the system of planning the needs of clean materials leads to an increase in the profit margin in the factory and the statement No. (10) got a mean of (4.07) points out of five points with a standard deviation Amount of (2.63) points and (81%) of the members of the research sample believe that the management of the factory has the ability when applying the system of planning the needs of clean materials will achieve an increase in market share, and the statement No. (9) has obtained a mean of (3.95) points out of five points with a standard deviation of (2.51) points and believes (79%) of the members of the research sample. The factory management pays attention to spending on promotional campaigns when applying the system of planning the needs of materials, while statement No. (7) obtained an arithmetic mean of (3.82) points out of five points with a standard deviation of (2.3) points and (76%) of the members of the research sample believe that the application of the system of planning the needs of clean materials in the factory leads to the provision of various products of high quality, while phrase number (5) obtained arithmetic mean of (3.77) points from The origin of five points with a standard deviation of (2.02) points and believed (75%) of the members of the research sample. The application of the system of planning the needs of clean materials provides an increase in the return on investment and statements No. (4 and 6) obtained an arithmetic mean of (3.67) points out of five points with a standard deviation of (2.02) points and (73%) of the members of the research sample believe that the application of the system of planning the needs of clean materials leads to reducing the cost of production in the factory and achieving an increase in the return on the right of ownership, and the statement No. (12) obtained an arithmetic mean of (3.5)

Vol. 6, No. 01; 2023
ISSN: 2581-4664

points from The origin of five points with a standard deviation of (2.02) and (70%) of the members of the research sample believe that the application of the system of planning the needs of clean materials leads to the factory obtaining a competitive advantage, as well as statements No. (2 and 8) obtained a mean of (3.42) points out of five points with a standard deviation of (2.32) points and (68%) of the members of the research sample. The application of the system of planning the needs of clean materials leads to increased utilization of available energies and allows to reduce the sale price of products, and statement No. (3) obtained a mean of calculation of (3.25) points out of five points with a standard deviation of (2.22) points and (65%) of the members of the research sample believe that the application of the system of planning needs of clean materials leads to reducing the extinction of raw materials involved in the production, while phrase number (1) has obtained the lowest arithmetic mean of (3.1) One out of five points with a standard deviation of (2.23) points and (62%) of the research sample members believe that the application of the clean materials needs a planning system that the application of the clean materials needs planning system leads to a reduction in the stock of the last duration.

Second: Measuring the responses of the members of the research sample on the dimensions of environmental waste.

Table (2) Responses of the members of the research sample to remove environmental waste

N	standard	**Strongly agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly disagree**	**Mean**	**Standard deviation**	Relative importance
	Content of phrases	Iteration	Iteration	Iteration	Iteration	Iteration			
	Source of waste								
1-	The factory management conducts periodic evaluations of the suppliers of materials involved in the production	**10**	**12**	**9**	**6**	**3**	**3,65**	**1,73**	**73 %**
2-	The factory management adopts international standards in the inspection and selection of materials involved in production	**9**	**11**	**7**	**8**	**5**	**3,27**	**1,75**	**65,4%**

Vol. 6, No. 01; 2023
ISSN: 2581-4664

	processes								
3-	The factory management designs its products in a way that helps to reuse them	**8**	**12**	**7**	**5**	**8**	**3,17**	**1,78**	**63,4%**
	Average	**9**	**11,66**	**7,66**	**6,33**	**5,33**	**3,31**	**1,73**	**66,2%**
	Getting rid of waste								
4-	Waste and production waste are sold to third parties for use as raw materials in other industries.	**12**	**12**	**10**	**3**	**3**	**3,67**	**1,70**	**73,4%**
5-	The waste disposal system in the factory is subject to continuous control by specialized departments in the factory and government regulatory bodies	**13**	**12**	**7**	**6**	**2**	**3,85**	**1,78**	**77%**
6-	The management of the factory adheres to the legal legislation related to the preservation of the environment	**14**	**11**	**9**	**2**	**4**	**3,77**	**1,82**	**75,4%**
	Average	**13**	**11,66**	**8,66**	**3,66**	**3**	**3,70**	**2,02**	**74%**
	Traces of								

Vol. 6, No. 01; 2023
ISSN: 2581-4664

	waste								
7-	Plant management goes beyond emission problems associated with the production process and the use of state-of-the-art technologies in waste reduction	**10**	**8**	**10**	**7**	**5**	**3,27**	**1,74**	**65,4%**
8-	Plant management takes into account reducing non-renewable energy consumption and reducing the noise level caused by production processes	**11**	**9**	**6**	**3**	**11**	**3,42**	**1,83**	**68,4%**
9-	The factory management takes advantage of the production waste to produce other goods	**9**	**9**	**8**	**6**	**8**	**3,27**	**1,75**	**65,4%**
	Average	**10**	**8,66**	**8**	**5,33**	**8**	**3,18**	**1,73**	**63,6%**
	Overall average of environmental waste	**10,66**	**10,66**	**8,10**	**5,10**	**5,44**	**3,40**	**1,81**	**68%**

Source: Preparation of researchers based on the questionnaire form

The data of the above table indicate that the factory management has a clear interest in

Vol. 6, No. 01; 2023
ISSN: 2581-4664

environmental waste and this is reflected in the responses of the research sample, as this variable obtained in total a general arithmetic average of (3.40) points out of five points with a standard deviation of (1.81) and 68% of the members of the research sample believe that the management of the factory pays clear attention to the dimensions of environmental waste. Also, individually, these answers were reflected by the members of the research sample for the dimensions of environmental waste, the variable of waste disposal obtained the highest arithmetic mean of (3.70) points out of five points and a standard deviation of (2.02) blister and 74% of the members of the research sample believe. The factory management gets rid of the waste caused by the production processes by selling waste and production waste to external parties for use as raw materials in other industries, as well as the waste disposal system in the factory is subject to continuous control by specialized departments in the factory and government regulatory bodies, and also the factory management adheres to the legal legislation related to the preservation of the environment. As for the source of waste, it obtained an average calculation of (3.31) points out of five points and a standard deviation of (1.73)reached and believed (66.2%) of the members of the research sample, and believed (66.2%) of the members of the research sample. The factory management has an orientation on the source of waste by conducting periodic evaluations of the suppliers of materials involved in the production and adopting international standards in the inspection and selection of materials involved in the production processes. The variable of the effects of waste obtained the lowest mean of (3.18) points out of five points and a standard deviation reached (1.73) and (63.2%) of the members of the research sample believe that the factory management is following up the effects of waste caused by production processes by overcoming the problems related to emissions associated with the production process and the use of modern technologies in reducing waste and also taking into account the reduction of the consumption of non-renewable energy such as fuel, reducing the level of noise caused by production processes and taking advantage of production waste to produce other goods.

4.TESTING RESEARCH HYPOTHESES

Null hypothesis H0:B=0
Alternative hypothesis H1:B ≠ 0

Table (3)Assess the impact of a material needs planning system on environmental waste

Dimensions of Environmental Waste (Y) / Clean MRP System (X)	Estimating the error Normative std	Regression line slope slope parameter B	Interpretation coefficient R2	Correlation coefficient R
	.42	.46	.39	.624

Source: Preparation of researchers based on the questionnaire form

N=40 P≤0.01

Vol. 6, No. 01; 2023
ISSN: 2581-4664

Table 3 shows that the correlation between the variable of the material needs planning system and the dimensions of environmental waste in aggregate is positive and significant at the level of (.01) Where the correlation coefficient of the variable of the material needs planning system (624.) and the interpretation coefficient was (39%) and this indicates that the changes in the dimensions of environmental waste conducted by the factory management are due to (39%) of them to the change in the material needs planning system, and the slope parameter of the regression line indicates that the change in the material needs planning system by one unit leads to a change in the dimensions of environmental waste of 46%. B=0 Alternative hypotheses are accepted H1:B≠0 .

Table (4)Variance Analysis System Planning Material Requirements in Environmental Waste

sample	Sum of squares	Df	Mean squares	R^2	F	Sig
Regression Residual Total	29.21` 38.75 67.96	1 38 39	29.21 1.24	.39	62.5	.01

Source: Preparation of researchers based on the questionnaire form

* Moral correlation at the level of .01 0

From the table above, we note the significance of the linear relationship between the dimensions of environmental waste and the clean materials needs planning system, supported by the calculated F value of(62.5) and that the model explains only (39%) of the total deviations and this is clear from the value of the determination coefficient as well as a relative increase in the value of the average error squares of(1.24)and that there are (61%) of deviations that the model could not explain, They are due to variables that are not included in the model.

5.CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

1-The clean material requirements planning system is one of the modern production and storage control systems, which provides the necessary materials for production through the development of the traditional requirements planning system and its inclusion of environmental considerations in order to eliminate waste resulting from production processes.

2-Environmental waste is not just a cost, but rather a multi-faceted concept, as the dimensions and types of waste are more than just the cost of disposing of materials. It is possible to use these dimensions to evaluate the clean (MRP) system.

3-There is a noticeable interest by the factory management in applying the system of planning requirements for clean materials and environmental waste dimensions, and this was confirmed by

Vol. 6, No. 01; 2023
ISSN: 2581-4664

the answers of the research sample members, as the independent variable (MRP) clean system achieved a relative importance of 73%, while the dependent variable was the dimensions of waste environmental, it achieved a relative importance of 68%.
4- The results of the research showed that there is a medium correlation between the clean(MRP) system and the dimensions of environmental waste, reaching 62.4,% with a significant level of 0.01.

5-The results of the research showed that there is a significant effect relationship between the clean(MRP) system and the dimensions of environmental waste, as the value of F reached 62.5%, with a significant level of 0.01.

5.2 Recommendations

1-The factory management must identify the strengths and weaknesses in its activity in order to make great use of modern production control systems, including the clean MRP system, and identify weaknesses and address them in order to reach optimal performance.
2-The factory management should develop a comprehensive strategy in all its departments in order to get rid of all forms of industrial waste, starting from the raw material and ending with the production process.
3-The need for industrial organizations to allocate special expenses for waste management, which would lead to reducing the effects of waste resulting from production processes.
4 – The need for industrial organizations to keep abreast of developments in modern production control systems, including the clean (MRP) system, in terms of operational planning and control of production scheduling in order to reduce waste resulting from production processes.

REFERENCES

1- Al-Khatib, Samir Kamel, and Hussein, Ahmed Ibrahim, and Faa'a, , (2010), the application of the material requirements planning system (MRP) and its impact on organizational performance, an analytical study in the General Company for Electrical Industries, Journal of the College of Administration and Economics, Issue 25.
2-Al-Nama, Mutasim Hood, (2007), the role of intellectual capital in establishing the foundations of lean manufacturing, an exploratory study in a sample of industrial companies in Nineveh Governorate, master's thesis, University of Mosul.
3-Hassan, Abd al-Razzaq Khader, (2014),The relationship and impact of environmental performance on financial performance by applying it to a sample of soft drink production companies in the city of Kirkuk, Anbar University Journal of Economic and Administrative Sciences, Volume 6, Number 11.
4- Hammoud, Ahmed Ali, (2017), The Effect of Application of Material Needs Planning (MRP) System on Competitive Advantage, Case Study of Jordanian Wisdom Pharmaceuticals, Master Thesis.
5- Khushim, Ali Mostafa, (2018), The Impact of the Application of Material Requirements Planning (MRP) System in Supply Chain Management, Master Thesis.
6-Heizer, Jay& Render, Barry, (2008),operation management, 10th Ed, Pearson education, Inc. ,Publishing as prentice Hall, New Jersey.
7-GrooverMikell p.,(2001), Automation production system and computer – Integrated

Vol. 6, No. 01; 2023
ISSN: 2581-4664

manufacturing ,2th ed ,London ,prentice- Hall.
8-Krajewski, Lee J. & Ritzman, Larr .P. &Malhotra, Manojk,(2010), "Operations Management" 9thed, Pearson Inc.
9- Melnyk, S. A. & Denzler, D. R., (1996), Operations Management: A Value Driven Approach (Burr Ridge: Irwin, McGraw-Hill.
10-Melnyk, S.A. & R.B. Handfield, & R.B. Calantone, & S. Curkovic, (2001),"Integrating Environmental Concerns Into the Design Process : The Gap Between Reality and Practice." Proceedings from the Annual Meeting of the Decision Sciences.
11-Porter, Albert , (2011), Operations Management, Download free at Book Boon. Com.
12- Slack, Nigel &chambers, stuat & Harland, Christine& Harrison, Alon & Johnston, Robert, (2004),"Operations Management", 4th edition, Pitman publishing, London.
13- Stevenson , William J., (2012),Operations Management, Theory and Practice, 11th Edition, Mc Graw–Hill, Irwin, New York.