The Role of Mass Customization in Achieving Competitive Advantage An exploratory study at Badoush Cement Factory in Nineveh Governorate

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Abstract

This research aims to verify the possibility of establishing a wide bequest in the Badoush cement factory in Nineveh Governorate. The broad recommendation is considered one of the essential requirements in the field of work of business companies, especially industrial ones, due to their role in achieving some of their goals, including preserving the environment. Thus, the research is targeted to answer the following three questions: To what extent do managers know about the concept of broad recommendation in the laboratory under investigation? Do directors in the laboratory register the respondents and seek to establish a broad tutoring system? What are the most appropriate requirements for application in the research laboratory? In addition, the research focused on establishing a broad recommendation system when producing laboratory products and presenting them to customers In light of these conclusions, several proposals were presented, including the need to increase interest in plant management by raising awareness among workers about the importance of achieving competitive advantage and growing. Moreover, the research reached conclusions, such as correlations and moral impact between broad commandment and competitive advantage, which lies in the research laboratory.
Keywords: **Mass Customization, Competitive Advantage**

1. Introduction

Caring for environmental fields where Mass customization is essential for achieving competitive advantage leads companies and factories to achieve superiority with different competitions, especially within services and industrial fields, where researchers have set a great deal of intention towards quality assurance and production management. Due to the limited field studies on the subject in Iraq generally and in Nineveh governorate precisely, researchers comprehended the necessity of including this study and implementing it at the Badoush Cement factory in Nineveh. The research included four sections, starting with the research's approach, then its Theoretical side, the field side, and finally, conclusions and suggestions.

2. Literature Review and Hypotheses Development:

2.1 Literature Review

a. The research problem:

The cement industry faces significant competitive challenges, especially after the Iraqi markets have been opened up to global markets, which requires laboratories operating in that field to overcome these challenges. The broad dimension is a modern administrative approach that obliges the company to focus on environmental quality. Consequently, the research problem can be understood by answering the following questions:

1. What degree of knowledge do managers in the research laboratory have about establishing and implementing the broad commandment concept?

2. What are the most appropriate requirements for application in the research laboratory?

3. Is there a significant correlation between the broad recommendation and the competitive advantage in the research laboratory?

b. The Importance of Research

The importance of this research lies in its consistency with writers' proposals in the field of marketing, production, operations and quality management and the necessity to take into account the requirements for establishing a broad recommendation system in the field of industry, especially in laboratories closely related to production processes that have an impact on the environment. This research is a scientific addition worthy of attention because there

is a lack of references to such studies, according to the researchers' knowledge of Iraqi writings in the field of production management

c. The Objectives of Research:

According to the issues which the research problem addressed, the research's objectives can be summarized as follows:

1. Providing a theoretical framework for managers and workers in laboratory research on Mass Customization.

2. Acknowledging the availability of basic requirements for establishing Mass Customization.

3. Know the requirements for establishing mass customization and the dimensions of the competitive advantage.

2.2 Hypotheses Development

A set of hypotheses is formulated to achieve the research's objective, as follows:

- **First hypothesis:** The research laboratory has the basic requirements for establishing the Mass Customization system.
- **Second hypothesis:** There is a significant correlation between the requirements for applying Mass Customization and Competitive Advantage.
- **Third hypothesis:** There is a correlation between information technology and the dimensions of Competitive Advantage separately.
- **Fourth hypothesis:** There is a correlation between the knowledge workers and the dimensions of the Competitive Advantage separately.
- **Fifth hypothesis:** Information technology significantly impacts the dimensions of the competitive advantage separately.
- **Sixth hypothesis:** There is a significant impact on the knowledge workers and the dimensions of the Competitive Advantage separately.

3. Research Model:
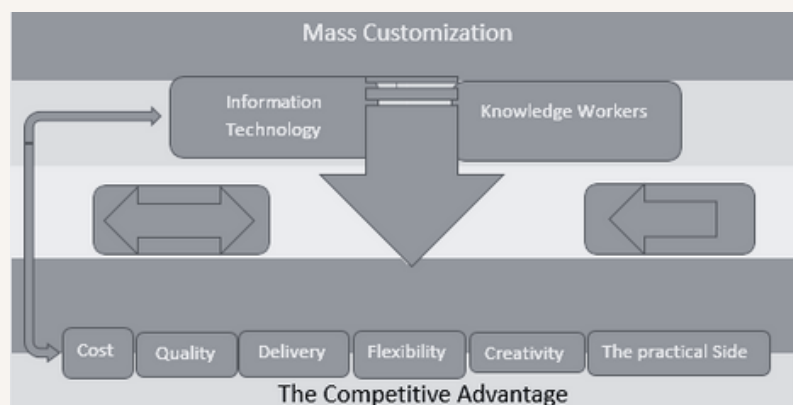
4. Research Methods & Data Collection

- **Research Methods**

The researchers adopted descriptive and analytical approaches to describe the population and sample of the research and describe and diagnose the research variables

- **Data Collection**

The following two methods were used to collect research data and information:

1. In order to cover the theoretical side, scientific books and Arab and foreign periodicals were used to collect ideas related to the field side.

The questionnaire was the main tool in data collection, and it helped in diagnosing and measuring research variables. Researchers have relied on identifying these variables in many studies, research, and theses on the theoretical side, benefiting from the opinions of experts and those with specialization.

- **Measures**

In the questionnaire, the five-point (Likert scale) was used, which was arranged as (Strongly agree, agree, neutral, disagree, strongly disagree), response range (1-5) and a hypothetical arithmetic mean of (3).

5. Theoretical Contributions

5.1. The Concept of Mass Customization

Mass customization contains several concepts that differ from one researcher to another. The term "Customization" refers to manufacturing according to customer requirements.

According to Pine (1992), the concept of Mass Customization is defined as "gathering the capabilities of skilled craftsmen to produce goods according to customer demand within the economies of mass production, On the other hand, (Hemdan and AlShimary ,2017 ,p.1) state that It is essential to determine the relationship between Mass customization and quality costs in economic units.

Consequently, Mass Customization is a flexible technical production system aiming to produce various goods and services, leading to broader production, lower cost, higher quality and faster delivery.

a. The Importance of the Mass Customization

The importance of Mass Customization lies in the following (Port, 1994, p.28):

A- Manufacturing which is compatible with everything related to the consumer, such as taste, specifications, and budget, indicates rapid industrialization and the emergence of high-quality departments.

B- Meeting all customer's needs accurately will enable the supplier to obtain prices that lead to high levels of profitability for the product.

C- The rapid Growth of some companies is due to Mass Customization, as they use large-scale production techniques to collect materials.

D- They design goods and provide services according to the unique requirements of independent customers, allowing them to balance between provided services and their prices.

E- The product's Flexibility and quality.

F- It aims to build lasting customer relationships and enables it to anticipate the needs of its customers.

Furthermore, Mass Customization offers companies competitive advantages, which are (Al-Amiri, 2002, p.42):

- Faster adaptation to the customer's needs.
- It adapts to the needs of the customer more closely.
- The ability to supply required materials.
- Faster design against market time to meet the needs of new customers.
- ·Variable lower production cost to meet needs.
- The ability to provide a complete line of goods or services.
- ·The ability to meet market demands even if a delay in production appears.

b. **Requirements for the application of the Mass Customization system**

Mass Customization needs to employ the best technical and administrative means and methods to make changes required to transform customers' desires and needs into production specifications, define designs and draw product specifications based on which raw materials, parts and internal components of the product are prepared until the final product is manufactured.

5.2. Information Technology

Information technology is significant due to rapid technical transformation and successive developments in computer hardware software, communication devices and means,

making information technology an essential tool in modern business organizations. (Al-Hassania 1998 p.141) defined information technology by addressing two parts;   :

- Physical part: Computer equipment, automatic control and communication technology.
- Mental part: It comprises software, artificial intelligence, and software engineering.

5.3. Knowledge workers

A group of individuals who use their minds more than their hands by collecting data, processing it, extracting a value from it and consequently adding benefit to the work of the organization.

5.4. The Competitive Advantage:
5.4.1. The concept of Competitive Advantage:

Defines competitive advantage as the ability of an organization to produce goods or services more effectively than competitors do, thereby outperforming them. (Al-Rfou *et al.* 2012,p853)

According to Porter (1980), and cited by (Pace *et al.* 1995) organizations achieve competitive advantage by distinguishing their firm's products or services from those of its competitors (ie making their products unique).

5.4.2. The Importance of Competitive Advantage

  Competitive advantage is vital for contemporary literature on strategic management and industrial processes. However, the government often interferes with its sectors and public institutions in a way that adopts influential roles in developing the competitive advantage of its institutions operating locally and internationally (Nadim, 2000, p. 51). Thus, the importance of competitive advantage has been determined through the following characteristics:

- It is determined according to the needs and desires of the customer.
- It provides critical support that contributes to business success.
- It provides a unique harmony between an organization's resources and environmental opportunities.
- It is durable, strong, and difficult for competitors to imitate.
- It provides a basis for future improvements.

5.5. Competitive Dimensions
In this study, we will use these dimensions:

5.5.1. Cost
Cost is one of the most basic dimensions for competition and that many organizations tried to rely on reducing their product cost to achieve competitive advantage, which means that the organization carry on the production and marketing of products at the lowest possible cost compared to its competitors, enabling it to sell at a lower price. (Alhayali, S, Sltan *et al,* 2013.p. 624-658)

5.5.2. Quality
The ability to offer products and services at the lowest cost and free of defects, and to ensure the achievement of discrimination to the organization under the existing competition in the market and represent the overall attributes and characteristics of the product and the service that meets the needs of customers (Gupta, Garg & Kumar, 2014, 81).

5.5.3. Delivery
It refers to presenting products that are designed for customers promptly. In other words, delivery should be done according to the agreed time and with speed and rapid transfers that occur in the markets, as well as their results in achieving the goals of the organization and the delivery process.

5.5.4. Flexibility
(William, 2007) points that flexibility is the ability of the organization to respond quickly to changes on the characteristics of the product's design or changes related to the size of customer's orders and the multiplicity of their desires.

5.5.5. Creativity
Creativity is one of the most critical aspects of the organization's achievement of superiority and distinction because it leads to the continuous production of developed goods and services that create customer value and profitability.

6. Data Analysis & Results

6.1. Analyzing correlation relationships between research variables:

This topic seeks to define the nature of the relationship between the variable (Mass Customization application), which represents the independent variable, and the Competitive Advantage variable, which represents the adopted variable, to verify the validity of the research hypotheses.

The correlation coefficient (Spearman) has been used to determine the type of relationship between the previously mentioned variables according to the computer program (SPSS).

1- Analyzing the correlation between the application of Mass Customization and Competitive Advantage

When conducting a correlation test between the requirements of applying the Mass Customization (X) and the elements of Competitive Advantage (Y), the data in Table (1) indicate that there is a significant correlation relationship through the value of the correlation coefficient, which amounted to (0.797) at a significant level (0.01). The relationship Between the two variables is positive, confirming the validity of accepting the second hypothesis, which states "there is a significant correlation relationship between the application of Mass Customization and Competitive Advantage".

Competitive Advantage elements		Variables
R	Sig	
0.797**	0.000	Mass Customization Application

Sig at **0.01   Sig at *0.05

Table (1)
Correlation relationship between the application of Mass Customization and Competitive Advantage

*Source: (Preparation of researchers based on SPSS. Ver.19 Programmed Outputs).

2- Analysis of the correlation between the application of the dimensions of Mass Customization and the dimensions of Competitive Advantage separately:

Information technology		Variables
R	Sig	
0.699**	0.000	Cost
0.539**	0.000	Quality
0.502**	0.000	Delivery
0.577**	0.001	Flexibility
0.373**	0.18	Creativity

Sig at **0.01   Sig at *0.05

Table (2)

Correlation relationship between Information Technology and Competitive Advantage elements

*Source: (Preparation of researchers based on SPSS. Ver.19 Programmed Outputs).

Table (2) data indicate that there are significant correlations between information technology and the dimensions of the Competitive Advantage (Cost, Quality, Delivery, Flexibility, and Creativity) and correlation rates (0.699, 0.539, 0.502, 0.577, and 0.373), respectively, and this confirms the validity of the third hypothesis "There is a significant correlation between Information technology and the dimensions of the Competitive Advantage separately"

3- Analysis of the correlation between Knowledge workers and the dimensions of Competitive Advantage:

Knowledge workers		Variables
R	**Sig**	
0.770**	0.000	Cost
0.570**	0.000	Quality
0.540**	0.000	Delivery
0.600**	0.001	Flexibility
0.580**	0.18	Creativity

Sig at **0.01   Sig at *0.05

Table (3)

Correlation relationship between the Knowledge workers and Competitive Advantage elements

*Source: (Preparation of researchers based on SPSS. Ver.19 Programmed Outputs).

Table (3) data indicate the existence of significant correlations between Knowledge workers and the dimensions of the Competitive Advantage (Cost, Quality, Delivery, Flexibility and Creativity) and correlation rates (0.770,0.570, 0.540,0.600, and 0.580), respectively, and this confirms the validity of the fourth hypothesis "There is a significant correlation between the Knowledge workers and the dimensions of the Competitive Advantage separately".

6.2 Analysis of the impact relationships between the main variables of the research:

This topic aims to test the hypotheses of influence between research variables using the simple linear regression model in an attempt to demonstrate the effect of the relationship between the role of broad commandment and competitive advantage as follows:

To find out the significance of the effect of each sub-variable of the independent variables in each sub-variable of the dependent variables and at a significant level (0.05), we show the following:

6.2.1 Analyzing the impact relationships between Information technology and the dimensions of Competitive Advantage

A-Analyzing the impact between information technology and cost relationships.

The sig of the regression coefficient	Moral
P. Value	0.000
T	5.68
Regression coefficient	0.943
Sig.	Moral
P. Value	0.000
F	23.29
R2	0.445
Variable	Information technology

Table (4)

Results of the impact analysis of the relationship between
Information technology and cost

*Source: (Preparation of researchers based on SPSS. Ver.19 Programmed Outputs).

In Table (4), the amended (R2) indicates that the percentage of the explained difference in the cost due to the influence of the variable (information technology) is not less than (44%), which is an acceptable percentage indicating that (44%) of the total differences in the cost is determined by knowing Managing the factory with the methodology of (information technology) and that the remaining percentage (56%) represents the percentage of contributions of the variables that cannot be controlled.

Moreover, the value of (F) reached (23.29), which is of significant statistical significance at the level of (0.05) or (0.01). This indicates that the regression curve is good in explaining the relationship between (information technology and cost) as well as the significance of the regression coefficient that explains the impact relationship of information technology on cost as its value reached (0.94) and the value of (t) test was (5.68), which is significant at (0.05).

B- Analyzing the impact of information technology on quality relationships.

The sig of the regression coefficient	Moral
P. Value	0.000
T	4.00
Regression coefficient	0.614
Sig.	Moral
P. Value	0.000
F	16.07
R2	0.279
Variable	Information technology

Table (5)

Results of the impact analysis of the relationship between Information technology and Quality

*Source: (Preparation of researchers based on SPSS. Ver.19 Programmed Outputs).

In Table (5), the amended (R2) indicates that the percentage of the explained difference in quality due to the influence of the variable (information technology) is not less than (27%), which is an acceptable percentage indicating that the knowledge of the factory management determines (27%) of the total differences in quality, with the methodology of (information technology) and that the remaining percentage (73%) represents the percentage of the contribution of the variables that cannot be controlled.

In addition, the value of (F) reached (16.07), which is statistically significant at the level of (0.05), and this indicates that the regression curve is good in Explanation of the relationship between (information technology and quality), as well as the significance of the regression coefficient that explains the effect of information technology on quality as its value reached (0.64) and the value of (t) test was (4.00), which is significant at (0.05).

C- Analyzing the impact of information technology on delivery relationships.

The sig of the regression coefficient	Moral
P. Value	0.000
T	4.294
Regression coefficient	0.879
Sig.	Moral
P. Value	0.000
F	18.435
R2	0.309
Variable	Information technology

Table (6)

Results of the impact analysis of the relationship between Information technology and delivery

*Source: (Preparation of researchers based on SPSS. Ver.19 Programmed Outputs).

It is noticed from Table (6) that the modified (R2) index is the percentage of the explained difference in speed due to the influence of a variable (information technology) by not less than (30%), which is an acceptable percentage indicating that (30%) of the total differences in speed is determined from Through the factory management's knowledge of the (information technology) methodology and that the remaining percentage (70%) represents the percentage of the variables' contribution that cannot be controlled. Moreover, the value of (F) reached (18.435), which is statistically significant at the level of (0.05), and this indicates that the regression curve is good in explaining the relationship between (information technology and speed) as well as the significant significance of the regression coefficient that explains the effect relationship of technology Information in the velocity, as its value was (0.87) and the value of (t) test was (4.29), which is significant at the level (0.05).

D- Analyzing the impact of information technology on flexibility relationships.

The sig of the regression coefficient	Moral
P. Value	0.000
T	5.065
Regression coefficient	0.992
Sig.	Moral
P. Value	0.000
F	25.659
R2	0.387
Variable	Information technology

Table (7)

Results of the impact analysis of the relationship between Information technology and Flexibility

*Source: (Preparation of researchers based on SPSS. Ver.19 Programmed Outputs).

The modified (R2) indicates that the percentage of the explained difference in elasticity due to the influence of a variable (information technology) is not less than (38%), which is an acceptable percentage indicating that (38%) of the total differences in Flexibility are determined through the factory management's knowledge of the methodology (Technology Information) and that the remaining percentage (0.62) represents the contribution rate of the variables that cannot be controlled.

Moreover, the value of (F) reached (25.65), which is statistically significant at the level of (0.05), and this indicates that the regression curve is good in explaining the relationship between (information technology and Flexibility) as well as the significant significance of the regression coefficient that explains the effect relationship For Flexibility in information technology, its value reached (0.99) and the value of (t) test was (5.06), which is significant at the level (0.05.).

E- Analyzing the impact of information technology on creative relationships.

The sig of the regression coefficient	Moral
P. Value	0.012
T	2.632
Regression coefficient	0.50
Sig.	Moral
P. Value	0.012
F	6.926
R2	0.132
Variable	Information technology

Table (8)
Results of the impact analysis of the relationship between
Information technology and creatively

*Source: (Preparation of researchers based on SPSS. Ver.19 Programmed Outputs).

The modified (R2) indicates that the percentage of the explained difference in creativity due to the influence of the variable (information technology) is not less than (13%), which is an acceptable percentage indicating that (13%) of the total differences in creativity are determined through the factory management's knowledge of the methodology (Technology Information) and that the remaining percentage (87%) represents the share of variables that cannot be controlled. In addition, the value of (F) reached (6.92), which is of significant statistical significance at the level of (0.05), and this indicates that the regression curve is good In explaining the relationship between information technology and creativity, as well as the moral significance of the regression coefficient that explains the effect of information technology on creativity, as its value reached (0.50) and the value of (t) test was (2.63), which is significant at the level (0.05).

F- Analyzing the impact relationships between Information technology and the dimensions of Competitive Advantage:

The sig of the regression coefficient	Moral	Moral	Moral	Moral	Moral
P. Value	0.000	0.000	0.000	0.000	0.012
T	5.683	4.009	4.294	5.065	2.632
Regression coefficient	0.943	0.614	0.879	0.992	0.50
Sig.	Moral	Moral	Moral	Moral	Moral
P. Value	0.000	0.000	0.000	0.000	0.012
F	32.299	16.071	18.435	25.659	6.926
R2	0.445	0.279	0.309	0.387	0.132
Variable	Cost	Quality	Delivery	Flexibility	Creativity

Table (9)

Results of the impact analysis of the relationship between Information technology and the dimensions of Competitive Advantage

*Source:

(Preparation of researchers based on SPSS. Ver.19 Programmed Outputs)

The data in Table (9) indicate that there is a significant effect of information technology on the dimensions of the Competitive Advantage and in terms of the calculated (F) values, which are more significant than their tabular values, as indicated in the above table, and thus accept the fifth hypothesis, which says: "There is a significant impact of information technology on the dimensions of the Competitive Advantage separately".

6.2.2 Analysis of impact relationships between knowledge workers and the dimensions of Competitive Advantage

A- Analyze the impact of relationships between knowledge workers and cost

The sig of the regression coefficient	Moral
P. Value	0.000
T	5.653
Regression coefficient	0.811
Sig.	Moral
P. Value	0.000
F	31.953
R2	0.442
Variable	knowledge workers

Table (10)

Results of the impact analysis of the relationship between knowledge workers and cost

*Source:

(Preparation of researchers based on SPSS. Ver.19 Programmed Outputs)

The modified (R2) indicates that the percentage of the explained difference in the cost due to the influence of the knowledge workers is not less than (44%), which is an acceptable percentage indicating that (44%) of the total differences in the cost is determined by knowing the factory management with the methodology of (knowledge workers) and that The remaining percentage (56%) represents the share of variables that are not included in the research or that cannot be controlled.

Moreover, the value of (F) reached (31.953), which is of significant statistical significance at the level of (0.05) or (1%). This indicates that the regression curve is good in explaining the relationship between knowledge workers and cost, as well as the significant significance of the regression coefficient, which explains the effect relationship of knowledge workers in cost, as its value reached (0.81) and the value of (t) test was (5.65), which is significant at the level (0.05).

B- Analysis of the impact relationships between knowledge and quality workers:

The sig of the regression coefficient	Moral
P. Value	0.001
T	3.630
Regression coefficient	0.493
Sig.	Moral
P. Value	0.001
F	13.179
R2	0.238
Variable	knowledge workers

Table (11)

Results of the analysis of the effect of the relationship between knowledge workers and quality

*Source:

(Preparation of researchers based on SPSS. Ver.19 Programmed Outputs)

The modified (R2) indicates that the percentage of the explained difference in quality due to the influence of the knowledge workers by not less than (23%), which is an acceptable percentage indicating that (23%) of the total differences in quality are determined by the factory management's knowledge of the methodology of (knowledge workers) and that The remaining percentage (76%) represents the share of the variables that are not included in the study model or that cannot be controlled.

Moreover, the value of (F) reached (13.17), which is statistically significant at the level of (5%). This indicates that the regression curve is good in explaining the relationship between (knowledge workers and quality) as well as the significant significance of the regression coefficient that explains the effect relationship for knowledge workers in quality, as its value was (0.49) and the value of (t) test was (3.63), which is significant at the level (5%).

C- Analysis of the impact relationships between knowledge workers and Flexibility:

The sig of the regression coefficient	Moral
P. Value	0.000
T	5.241
Regression coefficient	0.873
Sig.	Moral
P. Value	0.000
F	27.472
R2	0.404
Variable	knowledge workers

Table (12)

Results of the analysis of the effect of the relationship between knowledge workers and Flexibility

*Source:
(Preparation of researchers based on SPSS. Ver.19 Programmed Outputs)

The modified (R2) indicates that the percentage of the explained difference in Flexibility due to the influence of knowledge workers is not less than (40%), which is an acceptable percentage indicating that (40%) of the total differences in Flexibility are determined through the factory management's knowledge of the methodology of (knowledge workers) and that The remaining percentage (59%) represents the share of variables that are not included in the research or that cannot be controlled.

In addition, the value of (F) reached (27.47), which is statistically significant at the level of (5%), and this indicates that the regression curve is good in explaining the relationship between knowledge workers and Flexibility as well as the significant significance of the regression coefficient, which explains the effect relationship for knowledge workers In Flexibility, as its value reached (0.87) and the value of (t) test was (5.24), which is significant at the level (5%).

D- Test the impact relations between knowledge workers and speed:

The sig of the regression coefficient	Moral
P. Value	0.000
T	4.863
Regression coefficient	0.823
Sig.	Moral
P. Value	0.000
F	23.650
R2	0.367
Variable	knowledge workers

Table (13)
Results of the analysis of the effect of the relationship between
knowledge workers and speed

*Source:
(Preparation of researchers based on SPSS. Ver.19 Programmed
Outputs)

The modified (R2) indicates that the percentage of the explained difference in speed due to the influence of the knowledge workers is not less than (36%), which is an acceptable percentage indicating that (36%) of the total differences in Flexibility are determined through the knowledge of the factory management with the methodology of (knowledge workers) and that The remaining percentage (63%) represents the percentage of the contribution of variables that are not included in the research or that cannot be controlled.

Moreover, the value of (F) reached (23.650), which is of significant statistical significance at the level of (5%). This indicates that the regression curve is good in explaining the relationship between (knowledge factors and speed) as well as the significant significance of the regression coefficient, which explains the effect relationship For knowledge workers in speed, as its value was (0.822) and the value of (t) test was (4.863), which is significant at the level (5%).

E- Examining the impact relationships between knowledge and creativity workers:

The sig of the regression coefficient	Moral
P. Value	0.000
T	5.054
Regression coefficient	0.697
Sig.	Moral
P. Value	0.000
F	25.542
R2	0.386
Variable	knowledge workers

Table (14)

Results of the analysis of the effect of the relationship between knowledge workers and creativity

*Source:

(Preparation of researchers based on SPSS. Ver.19 Programmed Outputs)

The modified (R2) indicates that the percentage of the explained difference in creativity due to the influence of knowledge workers is not less than (38%), which is an acceptable percentage indicating that (38%) of the total differences in creativity are determined by the knowledge of the factory management with the methodology of (knowledge workers) and that The remaining percentage (61%) represents the share of the variables that are not included in the research and that cannot be controlled.

Moreover, the value of (F) was (25,542), which is of significant statistical significance at the level of (5%). This indicates that the regression curve is good in explaining the relationship between knowledge workers and creativity, as well as the moral significance of the regression coefficient, which explains the effect of knowledge workers on creativity as its value reached (0.69) and the value of (t) test was (5.05) which is significant at the level (5%).

F- Examining the impact relationships between knowledge workers and the dimensions of competitive advantage

The sig of the regression coefficient	Moral	Moral	Moral	Moral	Moral
P. Value	0.000	0.001	0.000	0.000	0.012
T	5.653	3.630	4.863	5.421	5.054
Regression coefficient	0.811	0.493	0.822	0.873	0.697
Sig.	Moral	Moral	Moral	Moral	Moral
P. Value	0.000	0.001	0.000	0.000	0.012
F	31.953	13.179	23.650	27.472	25.542
R2	0.442	0.238	0.367	0.404	0.386
Variable	Cost	Quality	Speed	Flexibility	Creativity

Table (15)
Results of the analysis of the effect of the relationship between knowledge workers and the dimensions of competitive advantage

*Source:
(Preparation of researchers based on SPSS. Ver.19 Programmed Outputs)
The data in Table (14) indicate that there is a significant effect of the knowledge workers on the dimensions of the competitive advantage and in terms of the calculated (F) values, which are greater than their tabular values, as indicated in the above table, and thus accept the sixth hypothesis which says (there is a statistically significant effect between Knowledge workers and the dimensions of competitive advantage.

7. Conclusions and Proposals
- **Conclusions**

The results of the research can be summarized as follows:
1. The Mass Customization system is no longer the only entrancement available for the competitive strategy. Instead, modern concepts of demand have emerged.
2. It is necessary to reduce costs as the guideline in determining competitive prices or upgrading the level of product quality, speed in responding to the needs, desires and tastes of customers, and the factory's commitment to their direction, providing products and

delivering them on time, as well as adopting Flexibility.

3. The results of the preliminary statistical analyses related to diagnosing the level of importance of the requirements of the Mass showed that (Information technology ranked first in terms of the degree of importance by 79%, while knowledgeable workers ranked second at a rate of 70%, which gives a clear indication that the factory uses information technology.

4. The results of the preliminary statistical analysis based on diagnosing the level of importance of the dimensions of the competitive advantage showed that the cost dimension has achieved the first rank, followed by the quality dimension, then creativity and speed, and Flexibility, which indicates that the factory produces at low cost and with high quality.

5. The results of the applied study showed a strong and significant direct correlation between the requirements of applying the Mass Customization recommendation system and the dimensions of the competitive advantage.

6. The results presented indicate the availability of the main requirements for establishing a mass customization system in the research laboratory and that managers perceive the application of broad advice and its impact on competition in the markets.

- **Proposals**

The factory management should consider the following suggestions:

1. Adopting the broad bequest system as an essential system in the production process and creating the appropriate conditions for this, considering the appropriate timing and adopting the Mass Customization tutoring system.

2. Paying close attention to the competitive precedents and giving it the appropriate arrangement.

3. Increasing investments in the field of information technology on a large scale.

4. Increasing interest in the owners of competencies, experiences and creative capabilities and to provide them with the necessary support and development.

5. Considering the competitive advantages that are most appropriate for the Mass Customization system during its implementation requires focusing on the speed dimension to meet the customers' requirements.

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