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The Effect of Applying the Principles of Total Quality Management in Achieving the Quality Performance of Supply Chains from the Viewpoint of the Administrative Staff of Tihama Cement Company

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Abstract

This study aimed to reveal the relationship between the application of the principles of total quality management and the quality of performance of supply chains from the point of view of the administrative staff of Tihama Cement Company. It also aimed to know the extent to which the administrative staff of Tihama Cement Company is familiar with the concept of total quality management and their attitudes towards the application of total quality management and to know the requirements for applying the principles of total quality management from their point of view. The study sample included (48) participants. The researcher designed a questionnaire and distributed it to the sample members. Moreover, the descriptive analytical approach was used, and the percentage of frequencies, arithmetic means, and standard deviations of the answers of the study sample members were calculated.

The study has highlighted the existence of a relationship between the application of the principles of total quality management and the quality of supply chain performance from the point of view of the administrative staff of Tihama Cement Company. The results of the study showed that the sample members agreed on all the paragraphs and parts of the questionnaire.

Keywords: Management, Total Quality, Supply Chains, Productivity, Excellence, Effective Performance, Quality of Performance.

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Introduction

The rapid and successive developments in various fields of life in the era of globalization, the Internet and technological progress have led to major and fundamental changes in the life of modern man. These changes had a significant impact, directly or indirectly, on the productivity level of administrative organizations, which created more competition in order to provide the best services and achieve the highest levels of performance in the shortest period of time and with the least effort and cost. This will only be done by changing work systems and shifting from traditional methods to modern methods that focus on quality and continuous development.

Total quality is considered the most important administrative method in our time, through which it is possible to respond to changes in the labor market and overcome the challenges facing organizations. Total Quality Management seeks to improve the productivity of the organization and achieve the continuity of the quality of goods and services with a focus on achieving this in the shortest possible time and with the least effort and cost, in proportion to the needs of the beneficiaries (Mahmoud, 2007).

Total Quality Management is based, in its study of work method and performance improvement, on a scientific method based on accurate information. It also works to discover errors and treat them in a timely manner according to an effective method that focuses on teamwork, quality and achieving beneficiaries' satisfaction (Hegazy, 2002). Therefore, researchers' interest in the topic of total quality management has increased. In this respect, Al-Hadher (2000) focused on studying the effectiveness of total quality programs, while Al-Shammari (2007) studied the possibility of applying total quality management in the field of training. Moreover, Al-Zahrani (2004) focused on the possibility of applying the principles of total quality management in the field of security media. In the same context, Al-Mahwis (2004) studied the attitudes of workers towards the application of total quality management, while Al-Sharari (2000) studied the possibility of applying total quality management in the field of traffic and civil defense.

Research Questions

The current study seeks to answer the following main question:

Is there a relationship between the application of total quality management and the quality of performance from the point of view of the administrative staff of Tihama Cement Company?

The following questions arise from it:

1. Is there a relationship between enhancing the culture of quality among the employees and the quality of performance from the point of view of the administrative staff of Tihama Cement Company?
2. Is there a relationship between the commitment to quality development by the senior management and the quality of performance from the point of view of the administrative staff of Tihama Cement Company?
3. Is there a relationship between focusing on the continuous training process and the quality of performance from the point of view of the administrative staff of the Tihama Cement Company?
4. Is there a relationship between teamwork and quality performance from the point of view of the administrative staff of Tihama Cement Company?
5. Is there a relationship between workers' participation in planning, implementation and follow-up of the quality process and quality performance from the point of view of the administrative staff of Tihama cement company?
6. How familiar are the administrative staff of Tihama Cement Company with the concept of total quality management?
7. What is the attitude of the administrative staff of Tihama Cement Company towards the application of total quality management?
8. What are the requirements for applying the principles of total quality management in managing the Tihama Cement Company?

Research Objectives

1. Knowing the relationship between the application of total quality management and the quality of performance from the point of view of the administrative staff of Tihama cement company.
2. Knowing the relationship between enhancing the culture of quality among the employees and the quality of performance from the point of view of the administrative staff of Tihama Cement Company.

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3. Knowing the relationship between the commitment to developing quality by senior management and the quality of performance from the point of view of the administrative staff of Tihama cement company.
4. Knowing the relationship between focusing on the continuous training process and the quality of performance from the point of view of the administrative staff of Tihama Cement Company.
5. Understanding the relationship between teamwork and the quality of performance from the point of view of the administrative staff of Tihama Cement Company.
6. Knowing the relationship between employees' participation in planning, implementation and follow-up of the quality process and quality performance from the point of view of the administrative staff of Tihama cement company.
7. Finding out the extent to which the administrative staff of Tihama cement company are familiar with the concept of total quality management.
8. Knowing the attitude of the administrative staff of Tihama cement company towards the application of total quality management.
9. Knowing the requirements for applying the principles of total quality management from the point of view of the administrative staff of Tihama Cement Company.

Hypotheses

1. There is a statistically significant relationship between the application of total quality management and the quality of performance from the point of view of the administrative staff of Tihama Cement Company.
2. There is a statistically significant relationship between enhancing the culture of quality among the employees and the quality of performance from the point of view of the administrative staff of Tihama cement company.
3. There is a statistically significant relationship between the commitment to developing quality by the senior management and the quality of performance from the point of view of the administrative staff of Tihama cement company.
4. There is a statistically significant relationship between the focus on the continuous training process and the quality of performance from the point of view of the administrative staff of Tihama cement company.
5. There is a statistically significant relationship between teamwork and the quality of performance from the point of view of the administrative staff of Tihama cement company.
6. There is a statistically significant relationship between the participation of workers in the planning, implementation and follow-up of the quality process and the quality of performance from the point of view of the administrative staff of Tihama cement company.
7. The Administrative staff of Tihama Cement Company has a good knowledge of the concept of total quality management.

Methodology

Based on the nature of the current study, which seeks to know the effect of the application of the principles of total quality management in achieving quality performance from the point of view of the administrative staff of Tihama cement company, by revealing the extent to which the administrative staff of the company are familiar with the concept of total quality management and their attitudes towards the application of the principles of total quality management and the requirements for applying the principles of total quality management.

To achieve the objectives of the study, the researcher used the descriptive approach, which is based on studying the phenomenon as it is and expressing it at the quantitative and qualitative levels, and describing it accurately (Obaidat, 2006). In this context, the descriptive approach does not stop at searching for the hidden phenomenon and its different relationships, but rather goes beyond that to include analysis, linkage and interpretation to reach conclusions and suggestions (Al-Assaf, 2000). A questionnaire was designed and distributed to the study sample. The questionnaire included four topics as follows:

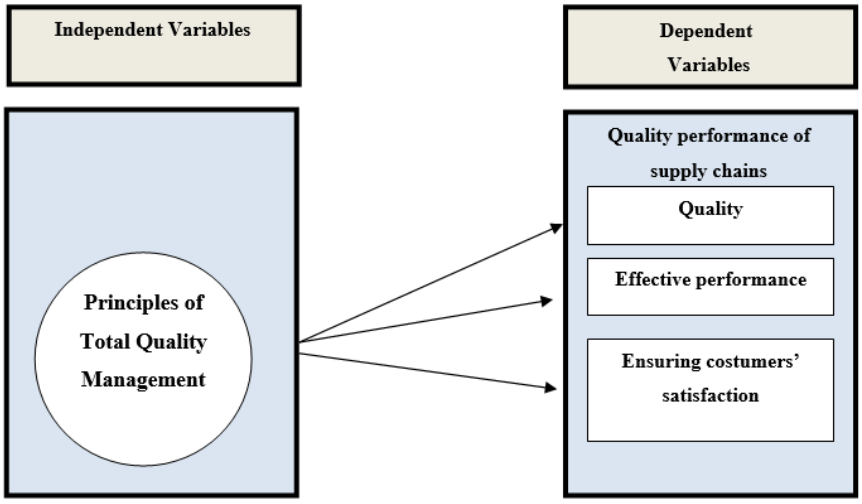
- The first topic: The sample's familiarity with the concept of total quality management. This topic included nine paragraphs, namely (enhancing the culture of quality among employees, continuous support and commitment to quality development by senior management, focus on the process of continuous education and training, teamwork, employee participation in planning, implementation and follow-up to the quality process, focus on the process of development and improvement of self-employment among workers, providing job stability for workers, creating an appropriate organizational environment to encourage initiative and creativity among workers, developing workers' abilities to work collectively to solve

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problems in a scientific manner, motivating workers financially and morally, adopting a policy to measure and evaluate workers' performance).

- The second topic: The attitude of the sample members towards the application of total quality management. This topic included (8) paragraphs, namely (the desire of workers to raise their skills, using new methods that save time, effort and costs, developing and applying new ideas, achieving supply chain objectives, devising new ways to solve the problems of the beneficiaries, using a procedural guide related to work, finding errors and treatment, ensuring customer satisfaction).
- The third topic: The effect of the application of total quality management in achieving quality performance. This topic included (8) paragraphs, namely (Continuous support by senior management is necessary to develop quality, continuous training is a top priority, the need to involve workers in planning and problem-solving, continuous development of workers' capabilities, developing workers' skills and creative abilities that contribute to enhancing performance, financial and moral support contributes to achieving quality performance, measuring and evaluating current performance contributes to achieving quality performance in the future, ensuring customer satisfaction.
- The fourth topic: Requirements for the application of total quality management. This part included (6) paragraphs (defining the management's vision, clarity of goals, developing modern communication techniques, providing the necessary financial allocations for the implementation of total quality management, seeking the assistance of total quality management experts, forming work teams to face the problems of implementing total quality management).

Study Variables



The Limits of the Study

The limits of the current study were as follows:

1. Population:

The current study is limited to the administrative staff of Tihama Cement Company.

2. Place:

The current study is limited to Tihama Cement Company.

3. Objective limits:

The current study is limited to the following topics:

1. The relationship between the application of total quality management and the quality of performance from the point of view of the administrative staff of Tihama cement company.
2. The relationship between enhancing the culture of quality among the employees and the quality of performance from the point of view of the administrative staff of Tihama Cement Company.

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3. The relationship between the commitment to quality development by senior management and the quality of performance from the point of view of the administrative staff of Tihama cement company.
4. The relationship between focusing on the continuous training process and the quality of performance from the point of view of the administrative staff of Tihama Cement Company.
5. The relationship between teamwork and quality of performance from the point of view of the administrative staff of Tihama cement company.
6. The relationship between workers' participation in planning, implementation and follow-up of the quality process and quality performance from the point of view of the administrative staff of Tihama cement company.
7. The extent to which the administrative staff of Tihama cement company are familiar with the concept of total quality management.
8. The attitude of the administrative staff of Tihama cement company towards the application of total quality management.
9. Requirements for applying the principles of total quality management in Tihama cement company.

Significance

1. Scientific Significance

The scientific importance of the research lies in the importance of the topic it deals with, which is the effect of applying the principles of total quality management in achieving quality performance. It is considered one of the modern and contemporary concepts in the field of management, as various institutions, companies, factories and bodies around the world seek to apply the principles of total quality in order to compete and achieve the highest levels of quality and efficiency in performance. The scientific importance of this study also highlights that it represents a qualitative addition by providing administrative thought with information that shows the effect of applying the principles of total quality management in achieving the quality of supply chain performance from the point of view of the administrative staff of Tihama cement company and their attitudes towards their application, as well as the requirements for their application.

Practical Significance

The practical importance of the current study is highlighted by the results it will produce regarding the effect of applying the principles of total quality management in achieving the quality performance of supply chains from the viewpoint of the administrative staff of Tihama cement company and their attitudes towards their application. The researcher hopes that the results will contribute to drawing a clear picture for the senior administrative leaders in the management of Tihama cement company about the employees' attitudes towards the application of the principles of total quality management and the requirements for their application. Thus, the current study will contribute to improving the administrative work in factory management, and thus improving the quality of performance.

The Study Problem

The rapid developments at the industrial and technological level since the last decade of the last century have brought about clear and radical changes in various aspects of life. In this context, the administrative process was affected by the technical momentum and modern concepts that accompanied it. Therefore, specialists in the field of management were interested in methods and means of achieving efficiency and quality in performance while shortening time, effort and cost. Accordingly, the term total quality management appeared.

Despite the use of quality concepts in the field of improving goods and services, these concepts have been extended to other areas such as supply chains, as the application of the principles of total quality management in supply chains works to develop performance and raise the level of productivity. Since the Supply Chain Management in Tihama Cement Company is considered the competent authority to deliver the company's products to customers, the use of total quality management will shorten routine procedures, which will positively affect the performance of supply chains.

The Concept of Total Quality Management

Before defining the concept of total quality management, we must first define the concept of quality.

First: The Quality

Opinions and definitions of the concept of quality varied, but all of them indicate to some extent that quality includes the meaning of excellence and perfection. Dardakah and Shibli see that quality is a dynamic state related to

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physical products and services, to people, processes and the surrounding environment, so that this state matches expectations (Al Dardakah and Shibli, 2002).

In the same context, quality is defined as the set of overall properties and characteristics that the product or service possesses, which determine the extent to which the needs and satisfaction of the customer are achieved (Riyad, 2002). A good product is one that achieves standard specifications or provides excellent performance for the service provided at a reasonable cost (Hegazy, 2002).

Second: The Concept of total Quality Management

The term Total Quality Management refers to a culture of excellence in performance where everyone works and strives to achieve customer expectations and perform the right work correctly from the beginning, with better quality, high effectiveness and in the shortest possible time (Zain El-Din, 1996).

Roots and Importance of Total Quality Management

Total quality management is considered the finest of contemporary administrative thought. The first appearance of the term total quality management was in the nineties of the last century, as a result of the development witnessed by management thought, especially with regard to human resources. It should be noted that modern management thought began to take shape since the emergence of Adam Smith's theory of productive efficiency at the beginning of the twentieth century. Then several classical and administrative behavioral schools appeared.

Fredrick Taylor is considered the most important pioneer of the classical school of management, who established the theory of scientific management in 1911. After that, Henry Fayol laid the foundations of management theory, which focused on work discipline. Then many theories appeared, such as the bureaucratic theory founded by Max Weber, Maslow's theory of needs, the theory X and Y by Douglas MacGregor in addition to the theory of contradiction between the individual and the organization founded by Chris Argyris and other theories that eventually led to the emergence of total quality management.

Objectives and Principles of Total Quality Management

A- Objectives of Total Quality Management

Total Quality Management seeks to improve productivity on a quantitative and qualitative level and reduce the cost level. It also aims to create an incubating environment for continuous development and to give all employees an opportunity to participate in the development process and to create a culture that cares about the needs of the beneficiaries. It also aims to improve the quality of outputs, encourage teamwork, achieve quality performance, as well as enhance trust between employees and management.

B- Principles of Total Quality Management

Total quality management is based on a set of principles, including awareness of the concept of total quality management, support of the senior management of the total quality management program, focus on the customer, continuous improvement, proper planning, spreading the quality function, teamwork, choosing the appropriate leadership for the work of total quality, full participation, training employees and making decisions based on fact.

Presentation, Analysis and Discussion of Study Results

The researcher relied on the Likart Five-Point Scale in order to determine the degree of agreement of the study sample, numbering (48), on the questionnaire paragraphs for each part. The arithmetic means and standard deviations were calculated for each paragraph of the questionnaire and the tool as a whole. The values of the arithmetic means were adopted to measure the extent to which the sample members agreed on the paragraphs of the questionnaire, as shown in Table No. (1).

Table 1: The Values of the Arithmetic Means of the Likert Five-Point Scale

Weighted Mean	Level
From 1 to 1.80	Strongly disagree
From 1.81 to 2.60	Disagree
From 2.61 to 3.40	Neutral
From 3.41 to 4.30	Agree
From 4.31 to 5	Strongly agree

* Prepared by the researcher

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First: The Results Related to the First Part (The Workers' Knowledge of the Concept of Total Quality Management)

To answer the main question of the first part, which consisted of (11) paragraphs about the concept of total quality management, the percentage of frequencies, arithmetic means and standard deviations of the answers of the sample members were calculated. This is done with the aim to identify the extent to which workers in Tihama Cement Company are familiar with the concept of total quality management. Table 2 illustrates this.

Table 2: Weighted Averages and Standard Deviations of Respondents' Responses to the Paragraphs Constituting the Part of Workers' Knowledge of total Quality Management

Paragraphs of the first part (workers' knowledge of total quality management)	scale	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Standard deviation	Result
Enhancing the culture of quality among employees	Frequency	0	2	4	34	8	4	0.645	Agree
	Percentage (%)	%0	%4.16	%8.33	%70.83	%16.66			
Continuous support and commitment to developing quality by senior management	Frequency	2	4	4	30	8	3.79	0.956	Agree
	Percentage (%)	%4.16	%8.33	%8.33	%62.5	%16.66			
Focusing on the process of continuous education and training	Frequency	0	2	2	38	6	4	0.577	Agree
	Percentage (%)	%0	%4.16	%4.16	%79.16	%12.5			
Teamwork	Frequency	0	2	4	36	6	3.95	0.610	Agree
	Percentage (%)	%0	%4.16	%8.33	%75	%12.5			
Employees' participation in planning, implementation and follow-up of the quality process	Frequency	0	4	2	34	8	3.95	0.734	Agree
	Percentage (%)	%0	%8.33	%4.16	%70.83	%16.66			
Focusing on the process of self-development and improvement of workers	Frequency	0	0	4	38	6	4.04	0.454	Agree
	Percentage (%)	%0	%0	%8.33	%79.16	%12.05			
Providing job stability for employees	Frequency	1	1	2	40	4	3.93	0.626	Agree
	Percentage (%)	%2.08	%2.08	%4.16	%83.33	%8.33			
Creating an appropriate organizational environment to encourage entrepreneurship and creativity among workers	Frequency	0	1	2	38	7	4.06	0.516	Agree
	Percentage (%)	%0	%2.08	%4.16	%79.16	%14.58			
Developing workers' abilities to work together to solve problems in a scientific way.	Frequency	0	1	3	39	5	4	0.5	Agree
	Percentage (%)	%0	%2.08	%6.25	%81.25	%10.41			
Motivating workers financially and morally	Frequency	0	0	2	41	5	4.06	0.376	Agree
	Percentage (%)	%0	%0	%4.16	%85.41	%10.41			
Adopting a policy for measuring and evaluating the performance of employees	Frequency	0	0	1	42	5	4.08	0.343	Agree
	Percentage (%)	%0	%0	%2.083	%87.5	%10.41			
Result of the first part (workers' knowledge of total quality management)							3.09	0.172	موافق

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Table No. (2) above shows the percentage of frequencies, arithmetic means, and standard deviations of the answers of the study sample members to the paragraphs of the first part. The arithmetic means of the mentioned paragraphs ranged between (3.79 and 4.08). This indicates the approval of the sample members on the paragraphs of the first part, as the arithmetic means from 3.41 to 4.30 indicate the approval of the respondents according to the weights mentioned in Table No. (1). The first paragraph (enhancing the culture of quality among employees) got an arithmetic mean (4) and a standard deviation (0.645), and the second paragraph (continuous support and commitment to developing quality by senior management) got an arithmetic mean (3.79) - which is the lowest value compared to the rest of the paragraphs included in the first part–and a standard deviation (0.956).

Moreover, the third paragraph (focusing on the process of continuous education and training) obtained an arithmetic mean (4) and a standard deviation (0.577), the fourth paragraph (teamwork) obtained an arithmetic mean (3.95) and a standard deviation (0.610), the fifth paragraph (Employees' participation in planning, implementation and follow-up of the quality process) got an arithmetic mean (3.95) and a standard deviation (0.734), the sixth paragraph (focusing on the process of self-development and improvement of workers) got an arithmetic mean (4.04) and a standard deviation (0.454), while the seventh paragraph (providing job stability for employees) obtained an arithmetic mean (3.93) and a standard deviation (0.626). Furthermore, the eighth paragraph (creating an appropriate organizational environment to encourage entrepreneurship and creativity among workers) obtained an arithmetic mean (4.06) and a standard deviation (0.516), the ninth paragraph (developing workers' abilities to work together to solve problems in a scientific way) obtained an arithmetic mean (4) and a standard deviation. (0.5), while the tenth paragraph (motivating workers financially and morally) got an arithmetic mean (4.06) and a standard deviation (0.376), and the last paragraph (adopting a policy for measuring and evaluating the performance of employees) got the highest arithmetic mean (4.08) and standard deviation (0.343). This indicates that the degree of familiarity of the administrative staff of Tihama cement company with the principles of total quality management was high.

The researcher explains this result that the workers in Tihama cement company realize the importance of total quality management in achieving quality performance. The researcher discussed the results of each paragraph of the first part as follows.

The results related to the first paragraph of the first part of the questionnaire (the tendency to enhance the culture of quality among workers) showed a high degree of approval, as it obtained an arithmetic mean (4) and a standard deviation (0.645), and this indicates the awareness of workers in Tihama cement company of the importance of quality culture as one of the most important principles of total quality management. The results also showed that the second paragraph of the same part (continuous support and commitment to developing quality by senior management) obtained an arithmetic mean (3.79) and a standard deviation (0.956). This result indicates the employees' awareness of the importance of the senior management's commitment to developing quality and providing the necessary support in this field. In the same context, the results showed that the third paragraph of the same part (focusing on the process of continuing education and training) obtained a high degree of approval with an arithmetic mean (4) and a standard deviation (0.577). This clearly indicates that employees are aware of the need for senior management to focus on continuous training of employees as one of the most important principles of total quality management. The results also showed that the fourth paragraph (teamwork) got an arithmetic mean (3.95) and a standard deviation (0.610). The researcher attributes this result to the employees' awareness of the importance of teamwork and its role in achieving optimal performance and achieving goals. In this context, the results indicated that the fifth paragraph (the participation of workers in planning, implementation and follow-up of the quality process) obtained a high degree of approval with a mean (3.95) and a standard deviation (0.734). The researcher explains this result that workers feel the importance of their participation in all steps related to achieving quality, as they are the cornerstone of the production process in general. The results also showed that the sixth paragraph (focusing on the process of self-development and improvement among workers) obtained a high degree of approval with an arithmetic mean (4.04) and a standard deviation (0.454). This indicates the awareness of workers of the importance of self-development of work-related skills, which would raise the level and quality of production.

The results also showed that the seventh paragraph (providing job stability for employees) obtained a high degree of approval with an arithmetic mean (3.93) and a standard deviation (0.626). The researcher attributes this result to the workers' feeling of the necessity of obtaining job stability as a solid basis for enhancing their loyalty to the company, which in turn will contribute to improving the efficiency and level of performance. In the same context, the results indicated that the eighth paragraph (creating an appropriate organizational environment to encourage entrepreneurship and creativity among employees) obtained a high degree of agreement with an arithmetic mean (4.06) and a standard deviation (0.516). The researcher attributes this result to the workers' awareness of the pivotal role that creativity plays, as one of the elements of total quality, in achieving efficiency and quality of performance.

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The results indicate that the ninth paragraph (developing the capabilities of workers to work collectively to solve problems in a scientific manner) obtained a high degree of approval, with a mean (4) and a standard deviation (0.5). The researcher attributes this result to the workers' awareness of the importance of teamwork and the adoption of scientific methods in dealing with problems, as this effectively contributes to enhancing performance and forming an objective vision about the obstacles that may hinder the progress of work and work to solve them. The results also showed that the tenth paragraph (motivating workers financially and morally) obtained a high degree of approval, with an arithmetic mean (4.06) and a standard deviation (0.376). This result clearly indicates the tendency of employees to obtain material and moral support, as this encourages them to raise the level of performance and make more efforts in order to achieve the company's goals.

It should be noted that the last paragraph (adopting a policy to measure and evaluate the performance of employees) obtained the highest degree of agreement between the paragraphs of the first part, with a mean (4.08) and a standard deviation (0.343). The researcher attributes this result to the workers' awareness of the importance of activating the role of measurement and evaluation of the performance of workers, as this contributes to creating an atmosphere of competition to achieve the highest levels of performance. In addition, these results, in general, indicate that the degree of familiarity of the administrative staff of Tihama cement company with the principles of total quality management was high.

Second: The Results Related to the Second Part (The Attitude of Workers Towards the Application of Total Quality Management)

In order to answer the main question for the second part, which consisted of (8) paragraphs about the employees' attitude towards the application of total quality management, the percentage of frequencies, arithmetic means and standard deviations of the answers of the sample members were calculated. This aims to identify the attitude of workers in Tihama cement company towards the application of total quality management. Table 3 illustrates this.

Table 3: Weighted Averages and Standard Deviations of Respondents' Responses to the Paragraphs Related to the Workers' Attitudes Towards the Application of Total Quality Management

Paragraphs of the second part (attitudes towards the application of total quality management)	Scale	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Standard deviation	Result
The tendency of workers to raise their skills	Frequency	0	1	2	39	6	4.04	0.498	Agree
	Percentage (%)	%0	%2.083	%4.16	%81.25	%12.5			
The use of new methods that save time, effort and costs	Frequency	0	0	3	41	4	4.02	0.381	Agree
	Percentage (%)	%0	%0	%6.25	%85.41	%8.33			
Development and application of new ideas	Frequency	0	0	4	42	2	3.95	0.351	Agree
	Percentage (%)	%0	%0	%8.33	%87.5	%4.16			
Achieving the supply chain objectives	Frequency	0	0	2	40	6	4.08	0.399	Agree
	Percentage (%)	%0	%0	%4.16	%83.33	%12.5			
Inventing new ways to solve the problems of the beneficiaries	Frequency	0	0	3	39	6	4.06	0.428	Agree
	Percentage (%)	%0	%0	%6.25	%81.25	%12.5			
The use of a procedural guide related to work	Frequency	0	1	1	42	4	4.02	0.432	Agree
	Percentage (%)	%0	%2.08	%2.08	%87.5	%8.33			
Discovering and resolving errors	Frequency	0	1	2	40	5	4.02	0.478	Agree
	Percentage (%)	%0	%2.08	%4.16	%83.33	%10.41			
Keen to achieve customer satisfaction	Frequency	0	2	2	41	3	3.93	0.516	Agree
	Percentage (%)	%0	%4.16	%4.16	%85.41	%6.25			
Result of the second part (attitudes towards the application of total quality management)							4.01	0.058	Agree

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Table No. (3) above shows the percentage of frequencies, arithmetic means, and standard deviations of the answers of the study sample members on the paragraphs of the second part. The arithmetic means of the mentioned paragraphs ranged between (3.93 and 4.08). This indicates the approval of the sample members on the paragraphs of the second part, as the arithmetic means from 3.41 to 4.30 indicate the approval of the respondents according to the weights mentioned in Table No. (1). The first paragraph (the tendency of workers to raise their skills) obtained an arithmetic mean (4.04) and a standard deviation (0.498), the second paragraph (the use of new methods that save time, effort and costs) obtained an arithmetic mean (4.02) and a standard deviation (0.381), the third paragraph (development and application of new ideas) obtained an arithmetic mean (3.95) and a standard deviation (0.351). Furthermore, the fourth paragraph (achieving the supply chain objectives) got an arithmetic mean (4.08) and a standard deviation (0.399) .In the same context, the fifth paragraph (inventing new ways to solve the problems of the beneficiaries) obtained an arithmetic mean (4.06) and a standard deviation (0.428), the sixth paragraph (the use of a procedural guide related to work) obtained an arithmetic mean (4.02) and a standard deviation (0.432), the seventh paragraph (discovering and resolving errors) got an arithmetic mean (4.02) and a standard deviation (0.478), while the eighth paragraph (keen to achieve customer satisfaction) got an arithmetic mean (3.93) and a standard deviation (0.516). This indicates the high tendency of the workers in Tihama cement factory towards the application of the principles of total quality management. The researcher explains this result that the workers in Tihama cement company realize the importance of total quality management in achieving quality performance. The researcher discussed the results of each paragraph of the second part as follows.

The results related to the first paragraph of the second part of the questionnaire (the tendency of workers to raise their skills) showed a high degree of agreement, as it obtained an arithmetic mean (4) and a standard deviation (0.645), and this indicates the tendency of workers to obtain training that will contribute to raising their skills and enhancing their capabilities. The results also showed that the second paragraph (using new methods that save time, effort and costs) obtained a high degree of agreement with an arithmetic mean (4.02) and a standard deviation (0.381). The researcher believes that this result reflects the workers' awareness of the importance and effectiveness of using new methods to ensure saving time, effort and costs.

The results also showed that the third paragraph related to the process of (developing and applying new ideas) obtained a high degree of approval, with a mean (3.95) and a standard deviation (0.351). This result indicates the workers' awareness of the paramount importance of new ideas and their role in raising the level and efficiency of production. The results related to the fourth paragraph (achieving the supply chain objectives) indicated a high degree of approval, with a mean (4.08) and a standard deviation (0.399). The researcher attributes this result to the employees' commitment to achieving the company's goals and their sense of responsibility towards those goals.

The results also indicated that the fifth paragraph (inventing new ways to solve the problems of the beneficiaries) obtained a high degree of approval, with a mean (4.06) and a standard deviation (0.428). The researcher believes that this result reflects the employees' interest and awareness of the importance of addressing the problems faced by customers in modern and effective ways, which improves the quality and efficiency of performance in the future. The results also showed that the sixth paragraph (the use of a procedural guide related to work) received a high degree of approval, with a mean (4.02) and a standard deviation (0.432). This result clearly indicates the employees' awareness of the importance of having a procedural plan for the workflow, which contributes to avoiding any shortcomings or errors. For any organized work, there must be a procedural plan that ensures the achievement of goals with high efficiency and accuracy.

The results also indicated that the seventh paragraph related to the topic (discovering and treating errors) obtained a high degree of approval, with a mean (4.02) and a standard deviation (0.478). The researcher attributes this result to the workers' awareness of the importance of discovering errors before they exacerbate and working to find radical solutions to them. This will inevitably lead to reducing the percentage of errors and benefiting from the current errors in making future plans to ensure that they do not recur. The results also indicated that the last paragraph of the second part of the questionnaire, which is related to the subject of (keen to achieve customer satisfaction), received a high degree of approval, with a mean (3.93) and a standard deviation (0.516).The researcher attributes this result to the employees' interest in achieving customer satisfaction as it is the most important goal of the company. This will only be achieved by improving the level and quality of performance. It can be said that these results, in general, indicate the high degree of tendency of workers in Tihama cement company towards the application of the principles of total quality management.

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Third: Results Related to the Third Part (The Effect of the Application of Total Quality Management in Achieving Quality Performance)

To answer the main question for the third part, which consisted of (8) paragraphs on the effect of the application of total quality management in achieving quality performance, the percentage of frequencies, arithmetic means and standard deviations of the answers of the sample members were calculated. This aims to identify the impact of the application of total quality management in achieving quality performance from the viewpoint of the workers in Tihama cement company. Table (4) illustrates this.

Table 4: Arithmetic Means and Standard Deviations of Respondents' Responses to the Paragraphs Related to the Effect of the Application of Total Quality Management on Achieving Quality Performance

Paragraphs of the third part (the effect of the application of total quality management on achieving quality performance)	Scale	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Standard deviation	Result
Total Quality Management works on developing the company's operational process	Frequency	0	0	2	40	6	4.08	0.399	Agree
	Percentage (%)	%0	%0	%4.16	%83.33	%12.5			
Total Quality Management contributes to increasing the company's productivity	Frequency	0	0	1	39	8	4.14	0.407	Agree
	Percentage (%)	%0	%0	%2.083	%81.25	%16.66			
Total quality management works to achieve stability for the company	Frequency	0	1	3	39	5	4	0.5	Agree
	Percentage (%)	%0	%2.083	%6.25	%81.25	%10.41			
Total quality management focuses on planning for the future and working to keep pace with it	Frequency	1	1	2	39	5	3.95	0.644	Agree
	Percentage (%)	%2.083	%2.083	%4.16	%81.25	%10.41			
Total Quality Management ensures that the product conforms to the specifications of occupational safety and security	Frequency	0	1	1	38	8	4.10	0.509	Agree
	Percentage (%)	%0	%2.083	%2.083	%79.16	%16.667			
Total Quality Management provides alternative plans that are used when crises occur	Frequency	0	1	1	39	7	4.08	0.493	Agree
	Percentage (%)	%0	%2.083	%2.083	%81.25	%14.58			
Total Quality Management works to keep pace with market requirements	Frequency	0	0	0	42	6	4.12	0.330	Agree
	Percentage (%)	%0	%0	%0	%87.5	%12.5			
Total Quality Management is based on carefully analyzed data regarding the decision-making process	Frequency	0	0	3	39	6	4.06	0.428	Agree
	Percentage (%)	%0	%0	%6.25	%81.25	%12.5			
Result of the third part (the effect of the application of total quality management on (achieving quality performance							4.07	0.094	Agree

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Table No. (4) above shows the percentage of frequencies, arithmetic means, and standard deviations of the answers of the study sample members to the third part paragraphs. The arithmetic means of the mentioned paragraphs ranged between (3.95 and 4.14). This indicates the approval of the sample members on the paragraphs of the third part, as the arithmetic means from 3.41 to 4.30 indicate the approval of the respondents according to the weights mentioned in Table No. (1). The first paragraph (Total Quality Management works on developing the company's operational process) got an arithmetic mean (4.08) and a standard deviation (0.399), while the second paragraph (Total Quality Management contributes to increasing the company's productivity) got an arithmetic mean (4.14) and a standard deviation (0.407).

Moreover, the third paragraph (total quality management works to achieve stability for the company) obtained an arithmetic mean (4) and a standard deviation (0.5), while the fourth paragraph (total quality management focuses on planning for the future and working to keep pace with it) got an arithmetic mean (3.95) and a standard deviation (0.644). Besides, the fifth paragraph (Total Quality Management ensures that the product conforms to the specifications of occupational safety and security) got an arithmetic mean (4.10) and a standard deviation (0.509), the sixth paragraph (Total Quality Management provides alternative plans that are used when crises occur) got an arithmetic mean (4.08) and a standard deviation (0.493), while the seventh paragraph (Total Quality Management works to keep pace with market requirements) obtained an arithmetic mean (4.12) and a standard deviation (0.330),

The last paragraph of this part (Total Quality Management is based on carefully analyzed data regarding the decision-making process) got an arithmetic mean (4.06) and a standard deviation (0.428). This indicates the high degree of awareness of the workers in Tihama cement company of the effect of the application of total quality management in achieving quality performance. The researcher explains this result that the employees of Tihama cement company are aware of the significant effect of applying the principles of total quality management in achieving quality performance. The researcher discussed the results of each paragraph of the third part as follows.

The results related to the first paragraph of the third axis of the questionnaire (the total quality management works on developing the company's operational process) showed a high degree of approval, as it obtained an arithmetic mean (4.08) and a standard deviation (0.399). The researcher attributes this result to the employees' sense of the pivotal role that total quality management can play in developing the company's operational process. The results also showed that the second paragraph (total quality management contributes to increasing the productivity of the company) obtained a high degree of approval, with a mean (4.14) and a standard deviation (0.407). This result clearly indicates the employees' interest in increasing the company's productivity and their awareness of the effective role that total quality management can play in increasing the company's productivity rate.

The results also indicated that the third paragraph (Total Quality Management works to achieve stability for the company) obtained a high degree of approval, with an arithmetic mean (4) and a standard deviation (0.5). This result reflects the employees' awareness of the importance of applying total quality management in achieving the stability and continuity of the company. In the same context, the results showed that the fourth paragraph (total quality management focuses on planning for the future and working to keep pace with it) obtained a high degree of approval, with a mean (3.95) and a standard deviation (0.644). The researcher explains this result that the employees have a future vision about the company's performance, and this vision is based on the application of the principles of total quality.

The results also showed that the fifth paragraph (the Total Quality Management is keen on conforming the product to the specifications of occupational safety and security) obtained a high degree of approval, with an arithmetic mean (4.10) and a standard deviation (0.509). This result reflects the employees' interest in the safety and safety specifications related to the product and their view towards total quality management as an effective solution in order to achieve these specifications. The results also indicated that the sixth paragraph (total quality management provides alternative plans that are used when crises occur) received a high degree of approval, with a mean (4.08) and a standard deviation (0.493). The researcher believes that this result indicates the employees' awareness of the efficiency and effectiveness of total quality management in providing the necessary and logical solutions when crises occur. Thus, it is considered the basis for the stability and continuity of the company.

The results also showed that the seventh paragraph (Total Quality Management works to keep pace with market requirements) obtained a high degree of approval, with a mean (4.12) and a standard deviation (0.330). This result reflects the employees' awareness of the importance of keeping pace with market requirements and the effective role that total quality management can play in this context. The last paragraph of this part (Total Quality Management is based on carefully analyzed data regarding the decision-making process) received a high degree of approval, with a mean (4.06) and a standard deviation (0.428). The researcher believes that this result reflects the employees'

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understanding of the scientific and logical methods pursued by total quality management in relation to decision-making. It can be said that these results in general indicate the high degree of awareness of workers in Tihama cement company of the effect of the application of total quality management in achieving quality performance.

Fourth: Results Related to the Fourth Part (the Requirements for Implementing total Quality Management)

To answer the main question for the fourth part, which consisted of (6) paragraphs on the requirements for the application of total quality management, the percentage of frequencies, arithmetic means and standard deviations of the answers of the sample members were calculated. This aims to identify the requirements for the application of total quality management from the point of view of workers in Tihama cement company. Table (5) illustrates this.

Table 5: Arithmetic Means and Standard Deviations of Respondents' Responses to the Paragraphs Related to the Requirements for the Application of Total Quality Management

Paragraphs of the fourth part (the requirements for the application of total quality management)	Scale	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Standard deviation	Result
Determining the vision of management	Frequency	0	1	1	40	6	4.06	0.474	Agree
	Percentage (%)	%0	%2.08	%2.08	%83.33	%12.5			
Clarity of goals	Frequency	1	1	2	38	6	3.97	0.661	Agree
	Percentage (%)	%2.08	%2.08	%4.16	%79.16	%12.5			
The development of modern communication technologies	Frequency	0	1	1	42	4	4.02	0.432	Agree
	Percentage (%)	%0	%2.08	%2.08	%87.5	%8.33			
Providing the necessary financial allocations for the implementation of total quality management	Frequency	1	1	2	38	6	3.97	0.661	Agree
	Percentage (%)	%2.08	%2.08	%4.16	%79.16	%12.5			
Consulting total quality management experts	Frequency	0	1	2	39	6	4.04	0.498	Agree
	Percentage (%)	%0	%2.08	%4.16	%81.25	%12.5			
Forming work teams to face the problems of applying total quality management	Frequency	0	0	1	43	4	4.06	0.316	Agree
	Percentage (%)	%0	%0	%2.08	%89.58	%8.33			
Result of the fourth part (the requirements for the application of total quality management)							4.02	0.134	Agree

Table No. (5) above shows the percentage of frequencies, arithmetic means, and standard deviations of the answers of the study sample members to the fourth part paragraphs. The arithmetic means of the mentioned paragraphs ranged between (3.97 and 4.06). This indicates the approval of the sample members on the paragraphs of the fourth part, as the arithmetic means from 3.41 to 4.30 indicate the approval of the respondents according to the weights mentioned in Table No. (1). The first paragraph related to the topic (determining the vision of management) obtained an arithmetic mean (4.06) and a standard deviation (0.474), while the second paragraph (clarity of goals) obtained an arithmetic mean (3.97) and a standard deviation (0.661), the third paragraph (the development of modern communication technologies) obtained an arithmetic mean (4.02) and a standard deviation (0.432). The fourth paragraph (providing the necessary financial allocations for the implementation of total quality management) obtained an arithmetic mean (3.97) and a standard deviation (0.661), while the fifth paragraph (consulting total quality management experts) obtained an arithmetic mean (4.04) and a standard deviation (0.498), while the last paragraph of this part (forming work teams to face the problems of applying total quality management) got an arithmetic mean (4.06) and a standard deviation (0.316).

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The researcher believes that these results clearly indicate the high degree of employee approval of the requirements for the application of total quality management mentioned in the fourth part of the questionnaire. The researcher explains this result that the workers in Tihama cement company are aware of the importance of these requirements. The researcher discussed the results of each paragraph of the fourth part as follows.

The results related to the first paragraph of the fourth part of the questionnaire (determining the management's vision) showed a high degree of approval, with a mean (4.06) and a standard deviation (0.474). The researcher believes that this result reflects the employees' vision about the necessity of finding a clear vision to manage the workflow in the company as a first step towards implementing the principles of total quality management.

The results also indicated that the second paragraph (clarity of goals) obtained a high degree of approval, with a mean (3.97) and a standard deviation (0.661). This result reflects the employees' vision on the topic of formulating clear goals as a consistent basis for applying the principles of total quality management in the company. The results also showed that the third paragraph (the development of modern communication technologies) obtained a high degree of approval, with a mean (4.02) and a standard deviation (0.432). The researcher believes that this result reflects the workers' awareness of the importance of modern communication technologies and their pivotal role in achieving total quality, and considering them as a cornerstone for establishing the pillars of total quality management.

Furthermore, the results reflected that the fourth paragraph (providing the necessary financial allocations for the application of total quality management) obtained a high degree of approval, with a mean (3.97) and a standard deviation (0.661). This result indicates the importance of allocating an adequate budget for the implementation of total quality management from the point of view of the workers in Tihama Cement Company, since financial appropriations are an absolute necessity for the implementation of any work or program. The results also indicated that the fifth paragraph (consulting total quality management experts) obtained a high degree of approval, with a mean (4.04) and a standard deviation (0.498). The researcher believes that this result reflects the workers' sense of the need to consult total quality management experts in order to be able to apply it optimally and achieve the desired goals. The results also showed that the last paragraph of this part (forming work teams to confront the problems of applying total quality management) obtained a high degree of approval, with a mean (4.06) and a standard deviation (0.316). The researcher believes that the process of applying any program must face some problems that can be overcome through a scientific method that includes the formation of special teams that will study those problems and work out the necessary solutions. This justifies the approval of the respondents to this paragraph.

Recommendations

Based on the results of the current study, the researcher recommends the following:

1. The management of Tihama Cement Company should define a clear vision for the development of the work.
2. The management of Tihama cement company should set clear goals with regard to improving the performance of supply chains.
3. Providing the supply chains in Tihama Cement Company with modern communication technologies.
4. Providing the supply chains in Tihama Cement Company with the necessary financial allocations to implement total quality management.
5. The management of Tihama cement company shouldconsult total quality management experts.
6. Forming work teams in the management of supply chains at Tihama cement company to face the problems of implementing total quality management.

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