



The Role of Dexterous Leadership in Achieving Total Quality Management

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Article Info

ISSN (online): 2583-6641

Impact Factor (RSIF): 8.56

Volume: 05

Issue: 02

March-April 2026

Received: 08-01-2026

Accepted: 06-02-2026

Published: 04-03-2026

Page No: 09-19

Abstract

The aim of the present study is to tackle important issues in organizational behavior, such as the extent to which employees in their organizations adopt and perform the concepts of Total Quality Management (TQM). Specifically, the aim of the present study is to explore the relationship between Dexterous Leadership and its link to achieving the dimensions of TQM in Al-Anwar Food Company. For this purpose, some hypotheses were suggested, dealing particularly with the comprehension of the perception of Dexterous Leadership from the perspective of the employees in the company chosen as the population of the research (open leadership dimensions, closed leadership dimensions, and the dimensions of TQM, which include top management commitment, employee participation, customer focus, and continuous improvement). A descriptive exploratory research method was employed for the collection, presentation, and discussion of the research data. To collect the necessary data for the research problem, the study employed a questionnaire targeting a number of 100 (positive) sample respondents from the employees of Al-Anwar Food Company. Various statistical means were adopted to carry out the research data collection, analysis of the practical aspect of the research, the analysis of the opinions of the research sample, the analysis of the research hypotheses, and the drawing of several conclusions. Among the key findings was the finding that there is an effect of Dexterous Leadership in its two dimensions, leading to the conclusion that the leader's behavior affects the behavior of the subordinates towards the achievement of the dimensions of Total Quality Management (TQM).

The research recommends that managers should offer their employees both material and moral incentives, where this would help to attain the dimensions of TQM, hence enhancing the performance of the individual and company.

DOI: <https://doi.org/10.54660/IJMOR.2026.5.2.09-19>

Keywords: Dexterous Leadership, Total Quality Management

Introduction

The concept of dexterous leadership involves the idea of emotional balance between continuity and change. This decreases the fear of performance uncertainty and increases employees' self-efficacy. Such a balance motivates them to be creative. The concept of dexterous leadership applies to both teams and individuals. It refers to the ability of leaders to foster exploratory and exploitative behaviors among their followers in schools through increasing or decreasing variations in their behavior as well as through switching between these behaviors in a flexible way. A dexterous leader inspires employees to achieve their goals and keeps them in an environment where employees rely on and believe in their peers. That is, it is worth mentioning that creative behaviors may not exist in most educational institutions; therefore, administrative creativity must be enhanced as part of professional development (AL-Eida, 2020)^[7]. Dexterous leadership is a gate to achieving the principles or dimensions of TQM. Thus, this research includes four main sections. Section one clarifies the relationship which exists between dexterous leadership and TQM. This section is dedicated to defining the methodology of the research, clarifying the problem of the research and its significance, objectives, hypotheses, model, and temporal and spatial scope. Section two introduces the theoretical framework

of the research, which examines the nature and dimensions of dexterous leadership. It also explains Total Quality Management (TQM), its development and importance, and dimensions, among others. Section three tackles the practical aspect, where the research hypotheses are tested along with the work on proving the validity and reliability of the research, among others. Section four shows the most important conclusions and recommendations resulting from this research.

The Methodological Framework

First: Problem Statement

The research problem is addressed through the following questions:

1. How aware is the research sample about Dexterous Leadership?
2. What is the level of awareness about the dimensions of TQM on the part of the research sample?
3. Is Dexterous Leadership linked to the dimensions of TQM?
4. To what extent does Dexterous Leadership promote improvement in the dimensions of TQM?

Second: The Significance of the Study

The significance of the present study rests in the benefit and implications achieved by the implementation of research through application and its contribution to developing the scientific and practical reality, that is, the field. The significance of the research is addressed herein:

1. The research helps the leaders to collect and then analyze the data related to quality in such a manner that it helps them draw evidence-based decisions and not mere assumptions.
2. It enhances organizational operations by studying and adopting best global quality dimensions.
3. It allows dexterous leaders to determine performance gaps and formulate strategies that lead to gains in sustainable improvement, which is the bedrock of TQM.
4. It aids in making them conscious of the reasons for quality management and how strategies can be made to develop a continuous improvement culture within the company understudy.

Third: The Objectives

The research aims to:

1. Establish the dimension of each principle of Dexterous Leadership for educational institutions.
2. Discuss the intellectual underpinnings of administrative creativity and its dimensions from the perspective of contemporary administrative and educational literature.
3. Establish how Dexterous Leadership plays a role in achieving administrative creativity.
4. Develop proposed mechanisms that have to do with achieving administrative creativity in light of the dimensions of Dexterous Leadership.

Fifth: The Hypotheses

In obtaining the research objectives and based on which a hypothetical model will be designed, two basic research hypotheses are accepted, each having several sub-hypotheses:

1. The First Main Hypothesis

There is a statistically significant correlation between the effective behaviors of leaders and the dimensions of Total Quality Management (TQM). Two sub-hypotheses follow from this main hypothesis:

1. Statistically significant correlation is found between open leadership behaviors and the different TQM dimensions.
2. There is statistically significant correlation between closed leadership behavior and the dimensions of TQM.

2. The second main hypothesis

Dexterous leadership has a statistically significant effect on the dimensions of TQM. Two sub-hypotheses can be specified:

1. Statistically significant effects are found for the open leadership behavior dimensions in relation to TQM.
2. There is a statistically significant effect of closed leadership behaviors on the dimensions of TQM.

Sixth: Statistical Methods

The present study applies the following statistical methods: Cronbach's Alpha for the reliability test, Kolmogorov-Smirnov test to test the normality of distribution of data, weighted arithmetic mean, and relative importance that is calculated by multiplying the weighted arithmetic mean with 20%. SD, variation coefficient, Pearson correlation coefficient, simple regression coefficient, t-test to determine the significant value of the effect, coefficient of determination (R^2) for determining the size of the effect which is explained by the independent variable on the dependent variable, and F-test for testing the significance of the estimated model.

The Theoretical Aspect

First: The Concept of Dexterous Leadership

Leadership is treated as a procedure of social influence which one person tries to guide other persons or a group of people to perform common tasks to achieve common objectives.

Dexterous leadership: It is an ability to facilitate both exploratory and exploitative behaviors in subordinates through the increasing or reducing of variability in behavior and switching between these two behaviors. It is also defined as the leader's ability skillfully and fairly to distribute their tasks, resources, and time between exploratory and investment activity, in order to go beyond the competing pulls of learning and to achieve work success (Shoo, 2016). Hence, Dexterous Leadership can be defined operationally as the manager's capability of influencing the behavior of the subordinates through increasing their diversity by open leadership behaviors to facilitate exploratory activities and reducing diversity by closed leadership behaviors to promote investment activities, whilst simultaneously striving flexibly between these two styles to stimulate subordinate creative performance and raise their ability to manage the contradictions, to adapt change in the organization's environment, and ensure its continued success.

The concept of dexterous leadership was created by various researchers and authors in this domain, given the need for a leadership style that ensures it is behavioral and cognitively

complex enough to carry out complex roles simultaneously, as shown below (Chang, 2016) ^[20]:

Dexterous leadership allows for the development of exploratory and investment-oriented creative behaviors of employees by either boosting or reducing the variation/differences of these behaviors, as well as enabling the flexibility towards these behaviors. Dexterous leadership is a concept that entails the ability of a leader to manage the allocation of their own task needs evenly between exploratory and investment-oriented task needs. In order to be a successful leader, a leader should have the capacity to coordinate the distribution of resources between routine task needs and exploratory task needs.

Dexterous Leadership is a combination of the leader's personality, his/her level of engagement in the operation and management of the business, his/her attitude toward subordinates, and the ability to exhibit two contrasting yet harmonious tendencies: investment and exploration activities, as well as the level of flexibility applied in such activities. This becomes a measure of the effectiveness of the leader in increasing or reducing the diversity found among subordinates.

Open leadership behaviors include openness to the employee, encouraging the employee to carry out tasks in innovative ways, urging the employee to take risks, and encouraging alternative ways for carrying out tasks. Closed leadership behaviors, on the other hand, are characterized by restraint within the employee, specifying the employee's working methods based on certain rules, laws, and procedures, reducing the number of errors, and ensuring that the direct supervision of the employee is under the leader (Rashid and Salih, 2015).

There are indications that state that leaders who are effective comprise thorough behavioral characteristics, including both open and closed leadership styles (Ketkar, 2017).

The concept of Dexterous Leadership is an evolving notion developed through various research and study works in the fields of management and organizational psychology. Dexterous Leadership is a construct based on influencing others to accomplish organizational or group objectives while taking into consideration the development and motivation of individuals. The emergence and development of this notion can be initiated by the following stages:

1. Origin

Traditional Leadership: Traditionally, leadership was defined as innate abilities or personal characteristics that leaders embody, which are strength, charisma, or the capacity for making difficult decisions.

Analytical Leadership: With the emergence of scientific studies in the early twentieth century, the subject of leadership began to be analyzed or researched. For instance, the need to do so resulted in the concept of the trait theory, that leaders are individuals who have certain inherent traits that help to distinguish them, in addition to qualities such as intelligence, courage, and self-confidence.

2. Evolution

Behavioral Leadership (1930-1950): The focus of study shifted to what kind of behavior a leader should possess, not what kind of innate ability they had. For example, democratic leadership theory and autocratic leadership theory referred to what leadership behavior was displayed by a leader.

Situational Leadership Theory (1960-1970): This period saw the emergence of the notion that leaders must be adaptive to situations, and that Dexterous Leadership requires an element of flexibility in decision-making. This school of leadership thus encouraged leaders to be adaptive to the nature of the situation they found themselves in.

1. Transformational Leadership and Values-Based Leadership (1980-1990)

Transformational Leadership: Researchers and scholars like Buss and Barnard started to identify the concept of transformational leadership, where the emphasis lies in how an individual is motivated to attain goals that are beyond the realm of personal and organizational goals.

Values-Based Leadership: This model of leadership focuses on the fact that true leadership is based on the values and ethics of integrity and such other parameters.

2. Dexterous leadership in the Modern Age (2000-Present)

Sustainable Leadership: In the past decades, the concept of sustainable leadership has been introduced, which encompasses all three dimensions: economic, social, and environmental. A leader must be results-oriented and employee- and community-friendly.

Dexterous leadership: In the contemporary world, the idea of dexterous leadership is associated with emotional intelligence (EQ), the power of influence, trust, and the strategic handling of crisis situations. In this case, a successful leader is the one who is capable of relating to others, unlocking their full potential, and creating an innovative thinking atmosphere.

Inclusive Leadership: This type of leadership also entails the capacity to accept diversity and individual differences, creating an environment of inclusiveness that helps to utilize the full potential of the team.

3. Digital Leadership and Leadership in the Present Age of Technology

Dexterous leadership is a sophisticated and ever-changing construct that stretches from the traditional image of the powerful and dominant leader to the concept of interactive leadership that emphasizes and focuses on sustainability, diversity, and innovation. The leadership that is needed today requires that leaders possess social, emotional, and technological competencies to enable them to lead effectively and attain success within ever-changing work environments. The term dexterous leadership is of vital importance to the field of management and development of organizations. It can be defined as the capability of the leader to influence individuals to achieve group goals while also maintaining a healthy work environment. The importance of the concept of Dexterous Leadership lies in different aspects, the key ones being:

1. Achieving high performance:
2. Building trust and enhancing the relationship between the leader and the team:
3. Flexibility in dealing with challenges:
4. Fostering innovation and creativity:
5. Achieving sustainable growth and development:
6. Motivating collective performance:

7. Dealing with diversity and inclusivity;
8. Leadership has an effect on the organizational culture
9. Rapid Response to Changes:
10. Enhancing Employee Satisfaction and Reducing Employee Turnover:

Dimensions of Dexterous Leadership

1. Open Leadership Behaviors

Open leadership behavior is an essential principle which allows employees more freedom in performing a given task. Leaders who practice open leadership behavior allow their employees to transcend the ordinary and, furthermore, practice new ways of performing tasks and activities. It is asserted that a leadership style which allows exploration is a dexterous leadership style (Jeanfeng, 2018). Dexterous Leadership style applies open leadership behaviors which enable subordinates to take initiatives and look for new ideas and solutions. Dexterous Leadership style also allows subordinates to practice a closed leadership style which enables them to implement new ideas and solutions they have developed. Thus, A dexterous leadership style is characterized by its ability to take initiative, innovate, and engage its subordinates in risk-taking behaviors. Open leadership behavior can be described as an increase in diversity and variety in subordinates' behaviors, which is achieved through encouragement and experimentation, doing things differently, and offering subordinates an opportunity for independent thinking and acting, and looking for new ideas and solutions and challenging situations. Thus, open leadership behavior allows subordinates to engage in exploration activities (Algamdi, 2018) ^[8]. Schindler (2015) adds that perfect processes and procedures for open leadership behaviors include:

1. Creating an open atmosphere.
2. Fostering an enthusiasm for conducting experiments and creating new, original, and innovative ideas.
3. Space for independent thinking and representation.
4. Motivating the followers to question the status quo and the existing practices.
5. Motivating employees to be risk-takers, think out of the box, and deconstruct rules to seek solutions out of the comfort zone.
6. Providing support in efforts to improve existing methods and to develop new problem-solving methods.
7. Developing an environment where blunders are made and lessons are learned from them, thus indicating a high level of tolerance to failing.

2. Close Leaders Behavior

A closed leader's behavior is defined as restricting the methods for accomplishing specific tasks. This implies that the leader behaves in such a manner that minimizes variation, intervenes, regulates routines and rules, regulates objectives, and only allows things to be done in a specific manner under the leader's guidance (Rosing *et al.*, 2011). A closed leadership behavior that minimizes variation in subordinates' behaviors is defined as taking correct actions, setting specific guidelines, and monitoring goal achievement (Algamdi, 2018) ^[8]. There is a dramatic emphasis that the perfect way of closed leadership behavior includes (Schindler, 2015):

1. Emphasizing Reliance on Well-Trained Competencies.
2. Encouraging effective representation and adherence to rules.
3. Pre-structuring tasks, the specification of work goals,

guidelines, and the provision of specific instructions for performing the tasks.

4. Monitoring and supervising goal achievement.
5. Taking corrective actions.
6. Meeting deadlines and adhering to plans.

Thus, from the above, it is clear that the core of the Dexterous Leadership behavior construct resides within the combination of exploratory behavior and exploitative and investment behavior for specific goals to be achieved. A leader, therefore, is an effective manager if he/she has the ability to balance different leadership styles within specific situations. Some work situations may be described as insisting on precise task accomplishment without room for trial and error, as dictated by adherence to regulations and instructions controlling and guiding such tasks and behavior. Other work situations may be described as encouraging and fostering creativity, innovations, and new and unfamiliar ideas within an environment that was previously not perceived that way. It is, therefore, essential for administrative managers to possess the ability to influence and lead employee behavior towards exploratory behavior via new ideas and investment behavior via actualizing these ideas, yet balancing these two effectively and shifting between them freely.

Second: Total Quality Management

Quality is basically an economic term that has been imposed by the conditions of industrial progress and even the technological revolution that has characterized the modern world. Countries that have been industrialized have been concerned with controlling the quality of their productions in order to have a bigger portion of the market and win the confidence of consumers. This has resulted in the creation of new working management techniques. It is no longer the role of management to simply give directions to workers, but it is also through the participation of workers in the management process, work organization, and even work proficiency (Abu Malouh, 2000) ^[4].

The maintenance of quality in services and products is definitely a respectable objective that humanity has always struggled towards in the course of its history. This objective of quality maintenance in both services and products has been emphasized in divine scriptures, and it reflects in the fact that the meaning of quality is mentioned several times in the Glorious Quran. Thus, the Prophet (Peace Be Upon Him and His Household) says: Almighty Allah loves that you do your work perfectly. Despite the long history of emphasizing the objective of quality maintenance in both services and products, the emphasis reached its climax during the 1990s, at which point quality became the road to success in different fields of service and production. The emphasis on quality, even at the beginning of the 21st century, in different fields of service and production, is natural. Education in general and university education in particular represents one of the most important aspects of life that calls for the maintenance of quality, attracting the attention of all sectors of society, due to its direct relationship to social growth in general and economic growth in particular (Kamal, 2004).

A quality system helps to organize the resources of people and materials through building up the infrastructure and indicating the procedures and instructions of all activities in the educational institution. Thus, it becomes a must for education institutions to establish a quality system with the capability to achieve the education and training strategies and

the desired aims of scientific research. This can be achieved through stipulating education specifications, planning for quality education, and providing the institution with international and highly qualified frameworks, materials, and methods for performing the curriculum (Othman, 2000). Considering the success of this concept in economic, industrial, commercial, and advanced technology organizations and with the appearance of the idea of competition between these industrial organizations to obtain the best product and satisfy customers, some of the education institutions showed interest in using the total quality management (TQM) concept within the framework of general and university education to reach a higher level of education and graduate students who can serve their society better (Nashwan, 2004).

1. Quality

The concept of quality is defined as excellence and good work. Although there are several different definitions of the concept of quality, its elements underscore the principle of excellence or good work. The American National Standards Institute (ANSI) and the American Society for Quality Control (ASQC) state that quality is a set of features or characteristics of a product or service capable of meeting specific needs. The American Federal Quality Institute (FQI) finds it to be doing the right thing the first time based on customer feedback to measure the degree to which performance improvement is achieved (Al-Abadi, 2013) ^[1]. Quality in educational institutions is what makes learning enjoyable. It is the key to success for the educator where the educational institution can be described as such where students' eagerness is for the process of teaching and learning, where the student is actively engaged in the process, making discoveries and innovations resulting from their aptitudes and abilities to meet their needs in light of the demands of their development (Abu Malouh, 2000) ^[4]. Quality can be defined differently, but all definitions focus on the concept of excellence as a principle.

2. Total Quality (TQ)

Total quality is defined as a standard, goal, or set of requirements, which is not a specific standard or degree of excellence but a constant effort towards excellence. Quality is a standard of perfection by which we see whether we have achieved what we set out to do, whether on time, in the way we decided would suit our clients' needs (Abdeen, 1992; Ibrahim, 2003). Quality is defined as a set of characteristics and features that accurately and comprehensively express the essence and state of education, including all its dimensions of inputs, processes, outputs, feedback, and the constant interaction to attain the desired goals of a specific society (Alimat, 2004).

3. Total Quality Management (TQM)

It is an organizational approach to management and control through the leadership of senior management in different activities for the pursuit of continuous improvement of quality. Additionally, it relies on the full participation of all employees within these different activities (Kamal, 2004). It is a collaborative approach to accomplishing tasks that relies on the ability and talents of both management and employees to continually improve quality and productivity through teamwork (Jablonski, 1996) ^[35]. Some people view this as an administrative strategy that has its base in a philosophical

framework that has its driving force as information. Within this framework, we can make an investment that seeks to utilize the talents and intellectual capacities of all employees within different levels within an organization for the pursuit of continuous improvement for the educational institution (Darbas, 1994) ^[27]. It is an administrative strategy that adopts an approach to work that is cooperative, scientific planning, and improvement, seeking to arrive at optimum results with maximum effectiveness and efficiency that meet and satisfy the community (Alimat, 2004).

The Emergence and Development of the Concept of Total Quality Management

The notion of quality was not created all at once, but through a series of continuous stages, which are four in total:

1. **The First Stage:** the inspection phase (1920-1940) This phase involved the checking of products based on pre-specified specifications. The Quality Management department was responsible for ensuring the conformity of the products to these specifications. This responsibility imposed two pressures on the department regarding the delivery of the specified production to the Production Management department (Zain Al-Din, 1996).
2. **The Second Stage:** The Statistical Quality Control Stage (1960-1940) On the other hand, quality control is a term used to refer to quality control activities and various techniques used in process implementation for quality requirements satisfaction (Madi, 1995). At this stage, some statistical techniques are used in quality control. This is credited to the American statistician Walshart, who wrote a book on statistical quality control (Madi, 1995).
3. **The Third Stage:** The Quality Assurance and Confidence Stage (1980-1960). The quality assurance stage was initiated in 1956 with the concept of total quality control, as put forward by Feigenbaum (Madi, 1995). This stage is identified by its proactive nature, which aims at avoiding mistakes, enhancing the quality of products, and increasing productivity. This stage caters to the problem of non-conforming products and services. Thus, it is a lot more creative compared to the previous two stages, which highlighted the examination of the mistakes/ errors committed in the process (Zain Al-Din, 1996) ^[45]. This stage follows the concept of reviewing the product according to specific parameters, monitored at every step and process, beginning from the designing of the product till the time it reaches the consumer, in order to ensure that there is no quality difference between the actual and intended product (Hassan, 1994) ^[32].
4. **The Fourth Stage:** The Total Quality Management (TQM) Stage (1980). The term of Total Quality Management was created in the early 1980s and still is used, while its birthplace is the USA. This fact is mostly related to the increase of competitive struggle in the world market and the presence of the Japanese economy, especially in emerging markets, with a great loss of market share for American and European economies. Accordingly, a new concept of Strategic Quality for American firms was created, with the use of innovative techniques and technologies in the field of quality improvement. (Al-Saoud, 2002) ^[39].

The Importance of Total Quality Management (TQM)

Total Quality Management (TQM) is one of the most popular management thoughts in the contemporary management field, with a vital role in the enhancement of organizational performance as well as the development of organizational market competitiveness. This management concept is, in fact, based on the organizational commitment to providing quality products and services with complete satisfaction of customers' expectations. In essence, the concept of Total Quality Management is based on involving all members of the organization in the quality improvement process with an organizational culture of innovation (Burhan, 2016) ^[19]. TQM strives to increase efficiency and productivity within an organization through its application and implementation of organizational practices that lead to decreased waste and errors, ultimately resulting in an increased ability to supply products and services that meet and often exceed customer demand. The importance of TQM can be understood from its profound effect on organizational performance and the level of company competitiveness. Organizations that succeed base their edge on quality, which leads to increased customer satisfaction. The following are some aspects that illustrate the importance of TQM:

1. **Improving Customer Satisfaction:** The first and foremost aim and objective of TQM is to improve and enhance customer satisfaction through delivering products and services that exceed customer expectations (Hamad *et al.*, 2016).
2. **Enhancing Production Efficiency:** By ushering in TQM, an enterprise/organization is able to increase production efficiency and eliminate wastage, particularly in terms of time and resources.
3. **Increased Competitiveness:** At a time when competition in different parts of the globe is getting keener, a high standard of quality serves.
4. **Fostering a Culture of Continuous Improvement:** Total Quality Management (TQM) supports the imperative of the Kaizen concept, which emphasizes continuous improvement in processes.
5. **Cost Reduction:** The costs of production problems can be reduced if TQM is successfully implemented.
6. **Enhanced Company Reputation:** Global quality is required not just as a customer specification, but also as a powerful promotional strategy.

Dimensions of Total Quality Management (Al-Dahyan, 1994; Ibrahim, 2003; Nashwan, 2004) ^[6]:

Total Quality Management includes a set of essential elements that help in the attainment of quality in all aspects of the organization. The set of essential elements comprises:

1. **Leadership Commitment:** Essentially, leadership commitment is the foundation of Total Quality Management. It is therefore required that the leadership of an organization shows commitment to the achievement of world-class quality through the promotion of programs and initiatives.
2. **Employee Engagement:** In order to apply Total Quality Management (TQM), there is a need for the engagement of all employees within an organization irrespective of their working levels or positions in the working hierarchy; therefore, there is a need for everyone to be engaged in quality improvement activities.
3. **Customer Focus:** The customer needs to be at the core of every quality decision the organization makes. TQM

is based on customer needs that are being interpreted and applied to every production and service process within the organization.

4. **Continuous Improvement:** Success of TQM is directly dependent on the continuous improvement of the business processes as well as the products themselves. The companies are able to achieve this through the application of different techniques like strategic planning.

The Research Procedures

First: Testing the Measurement Instrument

Reliability and Validity of the Research Variables

The reliability of scales refers to the stability of the scales, and thus they are expected to produce similar results when re-administered to the same set of samples. In this regard, the meaning of the reliability of scales is the stability and consistency of the scales (Sekrana, 2003) ^[40]. One of the most popular scales applied in measuring the reliability of questions in questionnaires is Cronbach's Alpha value. In this regard, Sekrana (2003) ^[40] states that when measured, if the value of the test is less than 0.60, it shows that the question has poor reliability, while if the value is over 0.70, the scale is acceptable, with values of 0.80 and over being good. The reliability ratio is said to be good if it achieves the level of 0.80 and above. Validity refers to the exact measurement of the variables. In other words, it is the measurement of the variables under investigation and not the measurement of other variables (Sekrana, 2003) ^[40]. There exist different kinds of validities, including content validity, which the researchers applied in their research. The major reason that justifies the application of content validity in the data is that it is considered a judgmental scale that depends on the exact definition of the variables under investigation by the researchers. Of course, it depends on the literature widely read in relation to the topic (Cooper and Schindler, 2014) ^[23].

Table 1: Reliability and Validity Coefficients for Research Variables and Dimensions

Variables and Dimensions	Cronbach's Alpha
Dexterous Leadership (X)	0.77
Open Leadership Behaviors	0.89
Closed Leadership Behaviors	0.73
Total Quality Management Dimensions (Y)	0.77
Leadership (Top Management Commitment)	0.85
Employee Involvement	0.70
Customer Focus	0.81
Continuous Improvement	0.76

Source: Outputs of (SPSS V.27).

Table (1) indicates that all the variables used in the study, namely dexterous leadership and Total Quality Management dimensions, fall within statistically acceptable reliability coefficients limits. It means that high reliability exists in the scales that have been used to measure the research items and hence the researchers can successfully depend on the obtained results to make sound decisions.

Data Description

After verifying the reliability of the data collection instrument, and since the hypothesis testing in this research relies on parametric statistics, which is based on the basic assumption that the data under analysis must have a normal distribution, the results obtained from these tests cannot be

trusted if parametric methods are applied to data that does not follow a normal distribution (Field, 2009) [30]. Although statisticians indicate that if the researchers use a sample that is relatively large relative to the research population, there is no need to worry about the normal distribution of the data (Field, 2009) [30]. Keen on ensuring the accuracy of the research results, the researchers subjected the data obtained from the questionnaire to one of the most important tests for the normal distribution of data, specifically, the Kolmogorov-Smirnov test. This test indicates that if the sample size is greater than 35 items, the test value can be calculated using the formula:

$$D = \frac{1}{\sqrt{n}}$$

N represents the sample size.

Since the research sample size is (100) individuals, the standard D value will be (0.12). If the Kolmogorov-Smirnov statistic value is greater than or close to the standard D value at the (1%) level, then the data exhibit a normal distribution at that level. Parametric statistical analysis tools can therefore be used, and the results can be considered reliable. If the data does not follow a normal distribution, the researchers will use non-parametric analysis tools. Table (2) shows the results of the normality test for the research variables.

Table 2: Kolmogorov-Smirnov Test for Normality of Research Variables and Dimensions

Research Variable Dimensions	Kolmogorov-Smirnov (Calculated D)	Standard D-Value (Critical)	Comparison	Result
Dexterous Leadership (X)	0.176	0.12	Calculated > Critical	Normally Distributed
Opening Leadership Behaviors	0.173	0.12	Calculated > Critical	Normally Distributed
Closing Leadership Behaviors	0.162	0.12	Calculated > Critical	Normally Distributed
Total Quality Management Dimensions (Y)	0.197	0.12	Calculated > Critical	Normally Distributed
Leadership (Top Management Commitment)	0.123	0.12	Calculated > Critical	Normally Distributed
Employee Involvement	0.175	0.12	Calculated > Critical	Normally Distributed
Customer Focus	0.171	0.12	Calculated > Critical	Normally Distributed
Continuous Improvement	0.160	0.12	Calculated > Critical	Normally Distributed

Source: Outputs of (SPSS. V.27).

Table (2) above shows that the data collected on the variables (Dexterous leadership and dimensions of Total Quality Management) both at sub and overall levels exhibit a normal distribution.

Second: Description and Diagnosis of Research Variables

This section seeks to present, analyze, and interpret the results of the responses of the research sample to the different parts of the questionnaire, as supported by the weighted arithmetic means, relative importance, standard deviations, and coefficients of variation for each of the different research variables included.

The research determined the responses' levels on the basis of the arithmetic means' category. Since the researcher's questionnaire is based on a five-point Likert scale ranging from strongly agree to strongly disagree, the research respondents' arithmetic means were divided into five categories. First, the range is calculated as the difference between the scale's maximum and minimum values, which is (5 - 1 = 4), then divided by the number of categories, which

is 5 in this case, implying that $4 \div 5 = 0.80$. To calculate the category, this 0.80 value is either added to the minimum value of the scale, which is 1, or subtracted from the maximum, which is 5. The five categories are presented as follows (Dewberry, 2004):

1-1.80: Very low

1.81-2.60: Low

2.61-3.40: Moderate

3.41-4.20: High

4.21-5.00: Very High

This issue will be discussed in the following sections.

First: Presentation, Analysis, and Interpretation of the Responses of the Participants

The sample for the research comprised dexterous leadership. This variable will be assessed through its two dimensions, which involve dexterous leadership, where two dimensions were used in measuring this variable as shown in the table below.

Table 3: Descriptive Statistics for Dexterous Leadership (n=100)

Dimensions	Weighted Mean	Standard Deviation	Relative Importance (%)	Agreement Level
Opening Leadership Behaviors	3.22	0.97	64%	Moderate
Closing Leadership Behaviors	3.50	1.01	70%	High
Dexterous Leadership (Total)	3.36	1.02	70%	High

Source: Outputs of (SPSS.V.27).

From the results shown in Table (3), it is clear that the variable (Dexterous Leadership) has an average value of (3.36) which categorizes it in the range of (High). Moreover, the overall relative importance of that variable was found to be (70%), while its standard deviation was found to be (1.02). This clarifies that the variable, under different dimensions, is available within the company being studied, in addition to the awareness and knowledge among the members of the sample group.

Referring to Table (3), which refers to the extent of the research sample's interest in the dimensions of the variable (Dexterous Leadership), the following can be observed:

1. Open Leadership Behaviors

At the overall level, this dimension recorded a weighted mean of (3.22). Hence, it can be said that this falls within the (Moderate) category. Additionally, this dimension recorded a

relative importance of (64%), and a standard deviation of (0.97). This shows that the products of the company are of high quality.

2. Closed Leadership Behaviors

The overall level shows a weighted arithmetic mean of (3.50), thus it falls in the (high) category. It was also seen that the relative importance reached (70%), and the standard deviation was (1.01). As discussed above, it is very clearly shown that the company supports its employees and is transparent in the operations.

Table 4: Descriptive Statistics for Total Quality Management (TQM) Dimensions (n=100)

Dimensions	Weighted Mean	Standard Deviation	Relative Importance (%)	Response Level
Leadership (Top Management Commitment)	3.43	0.97	69%	High
Employee Involvement	3.27	0.80	66%	Moderate
Customer Focus	3.07	0.94	62%	Moderate
Continuous Improvement	3.13	0.91	63%	Moderate
Dexterous Leadership	3.22	0.93	70%	High

Source: Outputs of (SPSS.V.727).

From table (4), it is clear that the variable (Dimensions of Total Quality Management) had a weighted arithmetic mean of (3.22), which means that the variable falls under the (High) category. The relative importance of the variable was (70%), and the standard deviation was (0.93). From the above, it is clear that the variable and its dimensions exist in the company, and there is a full understanding and awareness about it among the members of the sample.

By referring to Table (4), in order to exemplify the interest of the research sample members in the dimensions of the variable (Dimensions of Total Quality Management), the following can be observed:

1. **Leadership (Top Management Commitment):** For this dimension, at the overall level, it can be noted that the weighted arithmetic mean was (3.43), which puts it in the (High) category. Relative importance for this factor was (69%), and the standard deviation was (0.97). From the above information, it can be noted that this dimension is incorporated in the company under consideration.
2. **Employee Engagement:** This dimension had a weighted mean of (3.27), which falls under the category of (moderate). It also had a relative importance of (66%), and a standard deviation of (0.80). All this shows that this dimension is present in the particular company under study.
3. **Customer Focus:** At the overall level, for this dimension, the weighted mean was (3.07), which essentially indicates that this dimension comes under the (moderate) category. Relative importance for this dimension was (62%), and standard deviation was (0.94). It is hereby clear that this dimension is present within the company under consideration.
4. **Continuous Improvement:** As far as the total score is concerned, this information, analysis, and improvement aspect scored a weighted mean of (3.13), indicating that the value is within the (moderate) category. The relative importance of this information, analysis, and improvement aspect was found to be (63%), while the standard deviation was (0.91). This clearly indicates that this information is present within the company under consideration.

Second: Presentation, Analysis, and Interpretation of the Research Sample's Responses Regarding the Dimensions of Total Quality Management

The items included in this variable will be dealt with through an analysis of the dimensions included in the second variable, i.e., the dimensions included in Total Quality Management. Table (4) indicates the weighted arithmetic means, the relative importance, and the standard deviations.

Third: Testing the Correlation and Influence Hypotheses Among the Research Variables

This section is intended to verify the relationships of correlation and influence among the research variables involved. Verification of relationships of correlation and influence is planned to take place on the level of sub-hypotheses issued from the main hypotheses, as well as on the general level, through the method of simple correlation coefficient (Pearson coefficient of simple linear regression).

First: Testing the First Main Hypothesis Regarding the Correlation Between Dexterous Leadership and the Dimensions of Total Quality Management (TQM)

There is a statistically significant correlation between Dexterous Leadership and the dimensions of TQM. Three sub-hypotheses were formed out of this main hypothesis, as shown below:

1. There exists a statistically significant correlation between open leadership behavior and dimensions of TQM.
2. There is a statistically significant relationship between close leadership behavior and TQM dimensions. Table (5) presents the matrices of simple correlation coefficients between these variables and their dimensions. It is important to note that the table indicates the number of samples (100) and the type of test (tailed-2) before conducting the test to test the hypothesis. In the table, the abbreviation (.Sig) implies correlation coefficient significance. In other words, when there is a mark (*) on the correlation coefficient, it implies the correlation is significant at the (5%) level. In the similar context, when there is a mark (**) on the correlation coefficient, it implies the correlation is significant at the (1%) level. The judgment of the strength of the correlation coefficient is made in compliance with the rules outlined by Cohen (1977) as follows:

Low correlation: If the value of the correlation coefficient lies between (0.10 to 0.29)

Moderate correlation: When the value of the correlation coefficient ranges from 0.30 to 0.49

Strong correlation: If the value of the correlation coefficient lies between (0.5 to 1).

Table 5: The Correlation Matrix of the First Main Hypothesis and Its Sub-Hypotheses

Variables	Opening Behaviors	Closing Behaviors	Ambidextrous Leadership
TQM Dimensions			
Pearson Correlation	0.48**	0.50**	0.61**
Sig. (2-tailed)	0.000	0.000	0.000
N	100	100	100

Source: Outputs of (SPSS.V.727).

As shown above, there is a strong positive correlation (i.e., the value of the correlation coefficient is greater than 0.50); that is, the correlation between the concept of Dexterous Leadership and the dimensions of Total Quality Management (TQM) is statistically significant at a 1% level.

The correlation coefficient of the dimensions of Dexterous Leadership and the dimensions of TQM was (0.61) at a 1% level of significance, which is a high correlation according to Cohen's criterion.

At the dimension level, the highest correlation is between the dimension of open leadership behavior and the dimensions of TQM, which is due to the correlation value of (0.53) at a significance level of (1%). This is considered a strong positive correlation according to Cohen's measure for strong correlations. The lowest correlation coefficient is between the dimensions of closed leadership behavior and the dimensions of TQM, which is equal to (0.48), which is also considered a

strong correlation according to the same measure.

From the above, the first main hypothesis and the sub-hypotheses are accepted.

Second: Testing the second main hypothesis on the relationship between Dexterous Leadership and the dimensions of Total Quality Management (TQM)

There is a statistically significant effect of Dexterous Leadership on the dimensions of TQM. Three sub-hypotheses emerged as a result of this general hypothesis, as presented below:

1. There exists a statistically significant relationship between open leadership behavior and the dimensions of TQM.
2. There is a statistically significant effect of closed leadership behavior on the dimensions of TQM.

Table 6: Simple Linear Regression Analysis between Dexterous Leadership and Total Quality Management (TQM) Dimensions

Independent Variable	Dependent Variable: TQM Dimensions	β	R ²	T-Value	Sig. (T)	F-Value	Sig. (F)
Dexterous Leadership	Overall Relationship	0.60	0.39	5.77	0.000	35.56	0.000
Opening Leadership Behaviors	Sub-dimension	0.53	0.30	4.36	0.000	19.20	0.000
Closing Leadership Behaviors	Sub-dimension	0.51	0.27	3.23	0.000	15.57	0.000

Source: Outputs of (SPSS.V27).

Table 6 indicates that the regression coefficient for the variable dexterous leadership with the dimensions of quality management is (0.60). This implies that the dimensions of total quality management increase as the independent variable of dexterous leadership increases by (1). Thus, the effect is statistically significant owing to the high (t) value, which is (5.77) at (0.000). Moreover, dexterous leadership contributes (39%) to the changes in the dimensions of total quality management, while the (61%), is attributed to other variables beyond the proposed model. The model was found to be significant, given that the calculated (f) value, i.e., (35.56), was significant at the (0.000) level. Thus, in consideration of the above, the second main hypothesis is accepted, which states: (There is a statistically significant effect of Dexterous Leadership on the dimensions of Total Quality Management).

In order to prove the validity of the sub-hypotheses derived from the second main hypothesis, they will be tested as follows:

First sub-hypothesis: There exists a statistically significant effect of open leadership behaviors on the dimensions of Total Quality Management. Table (6) above shows the following:

1. The coefficient of the regression equation of open leadership behavior was (0.53). This indicates that when this dimension varies by one unit, the value of Total Quality Management dimension would increase by (53%). This is significant, as the calculated value of (t),

which was (4.36), is significant at (0.000).

2. The coefficient of determination, R², was approximately 0.30, which means that this factor or dimension accounts for 30% of all changes in the dimensions of Total Quality Management (TQM). The remaining 70% is attributed to other factors.
3. The calculated F-Value is 19.20, which is significant at the 0.000 level, revealing that the estimated model is significant in general. Therefore, the analysis of the results presented in Table (6) confirms the alternative hypothesis, which states: the dimension of open leadership behaviors has a statistically significant effect on the dimensions of TQM.

Table 6 shows the following facts:

1. The regression coefficient was (0.51). If the dimension changed by one unit, then the Total Quality Management (TQM) dimensions increase by (51%). The results were significant, as the calculated t-value was (3.23), which is significant at the (0.000) level.
2. The value of the coefficient of determination (R²) is around (0.27), which means that this dimension explains (27%) of the changes in the other TQM dimensions. The (73%) are due to other factors that are not considered in this model.
3. The calculated F-value, denoted as F, was (15.57), and this value is significant at the (0.000) level, and thus the estimated model is significant. Accordingly, from the analysis of results contained within Table (6), support for

the alternative hypothesis may be concluded, which holds that: There is a statistically significant effect of closed leadership behaviors on the dimensions of Total Quality Management.

Conclusions

1. In the present study, it was evident that leadership is a wide concept, as covered in the research population and sample.
2. The present study revealed the presence of open leadership behavior to a significant extent, as opposed to closed leadership behavior.
3. The study found a strong relationship between Dexterous Leadership and the realization of the dimensions of Total Quality Management (TQM).
4. The results revealed that Dexterous Leadership, in its two dimensions, has an effect on the dimensions of TQM.

Recommendations

1. Improving and enhancing the activities in the two areas of Dexterous Leadership, particularly the behavior of open leadership, since the highest results were obtained in this behavior by the Al Anwar Food Company.
2. The management of Al Anwar Food Company should take into consideration the aspect of closed leadership behavior by providing introductory workshops on the nature of these leadership behaviors.
3. It is imperative to concentrate on and improve the aspects of Total Quality Management, as it is the first step to excellence itself.
4. It is necessary to establish a department/division for Total Quality Management due to the significant effect of this element on the workflow of the administration.

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How to Cite This Article

Alwan ZY, Kazim ZA, Jawad RH, Shilkam MO. The role of dexterous leadership in achieving total quality management. *International Journal of Management and Organizational Research*. 2026;5(2):9-19. doi:10.54660/IJMOR.2026.5.2.09-19.

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