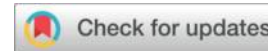






The impact of Total Quality Management on organizational innovation in Industrial organizations: The mediating role of job satisfaction: A field study at the building materials manufacturing company SPA LAFARGE LCM





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Abstract

This study aimed to analyze the impact of Total Quality Management (TQM) on organizational innovation, with job satisfaction as a mediating variable in this relationship. The research was conducted as a collaborative study between the Republic of Iraq and Algeria, where data was collected at SPA LAFARGE LCM Company in Algeria, and the results were analyzed and interpreted by researchers at the University of Baghdad, Republic of Iraq. The study population included all 436 employees, and a simple random sample of 300 employees was selected, from which 245 valid responses were retrieved for analysis.

The study employed Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) to test the hypotheses. The results showed a direct positive effect between TQM and organizational innovation, where quality practices contribute to improving the work environment, promoting innovation culture, and supporting employee participation in decision-making. The study also showed that TQM positively affects job satisfaction through improving reward systems, enhancing organizational justice, and providing training opportunities.

The findings confirmed that job satisfaction plays a mediating role between TQM and organizational innovation, as increased employee satisfaction levels enhance the impact of quality practices on innovation.

The study concluded that organizations seeking to promote innovation should adopt an integrated approach to TQM, focusing on employee motivation and improving the work environment, which contributes to achieving sustainable competitive advantage.

Keywords: Total Quality Management, Organizational Innovation, Job Satisfaction.

1. Introduction and Theoretical Background

In the fast-paced and changing business world, organizational innovations become a critical factor for maintaining competitiveness and survival (**Boudjellal, 2024**). Industrial organizations seek to improve performance and organizational creativity by adopting Total Quality Management (TQM) practices, which include a set of principles and procedures aimed at improving quality and increasing customer satisfaction (**Gil-Marques & Moreno-Luzon, 2015**).

Total Quality Management (TQM) is considered one of the management strategies that aims to improve the quality of products and services by involving all members of the organization in continuous improvement processes (**Arief & Setianingrum, 2023**).

The implementation of TQM relies on a set of principles including customer focus, continuous improvement, and employee involvement in decision-making processes.

These principles contribute to building an organizational culture that supports innovation and creativity within organizations (**Tortorella et al., 2020**). Additionally, research conducted in Tunisian industries confirmed that TQM has a direct and positive impact on organizational performance and innovation through organizational learning as a mediating variable. Organizational learning enhances organizational performance and innovation through the application of practices (**Tajouri & Lakhal, 2024**).

Job satisfaction plays an important role as a mediating factor between TQM and organizational innovation. Employees who feel satisfied with their work and work environment are more motivated to innovate and participate in process improvement. Studies also indicate that TQM practices lead to improved employee satisfaction by promoting a positive work environment and motivating employees to give their best.

A study found that TQM practices contribute to improving the organization's image, which increases employee satisfaction and enhances their commitment to innovation and creativity **(Babu & Thomas, 2021)**.

Thus, this study contributes to providing an in-depth understanding of the relationship between total quality management and organizational creativity through job satisfaction, which helps industrial organizations implement effective strategies to enhance innovation and achieve competitive excellence in the market.

Job attrition is an important issue in the field of business administration and organizational behavior, as This concept has become a source of motivation for employees and a key to personal development, satisfaction with the work environment and guidance Behavior toward achieving a goal. In general, job attrition represents the degree to which an individual integrates into the job

Which he practices and feels is important **(Houcine & Bouzekri, D., 2022)**.

2. Literature review

2.1 Total Quality Management

The concept of Total Quality Management emerged during the 1980s and 1990s in developed and developing countries. Japan was the first to adopt this concept to restore its economy after World War II, and it later spread to the United States and other parts of the world **(Toke & Kalpande, 2020)**. Subsequently, organizations began to adopt it as a program to improve quality and productivity in the early 1980s after the success achieved by Japanese organizations in enhancing competitive advantage **(Al-Ababneh, 2021)**. Consequently, it became a fundamental management philosophy used to improve quality and productivity in organizations and a top priority in many organizations due to the era of globalization and the highly competitive environment, which forces customers to search for products provided at the lowest possible cost **(Narayanti et al., 2023)**. In the face of growing competition, the provision of high-quality services to beneficiaries has become essential for the ongoing operation and success of institutions **(Farhan et al,2024)** . The literature has presented numerous definitions of Total Quality Management. The American Society for Quality defined it as a management strategy to achieve long-term success through satisfying its customers **(Thakkar et al., 2022)**. (Joseph Juran) defines it as a set of activities directed towards satisfying customers and employees, achieving high revenues, and reducing costs **(Mwaura, 2019)**. Quality management helps create a culture of trust, cooperation, teamwork, and quality thinking, along with a commitment to continuous improvement and learning, ultimately leading to company success **(Wahab, & Mohamed,2018)**. Figure (1) shows that there are seven basic elements of total quality management, which are explained by (Tang, 2021) as follows:

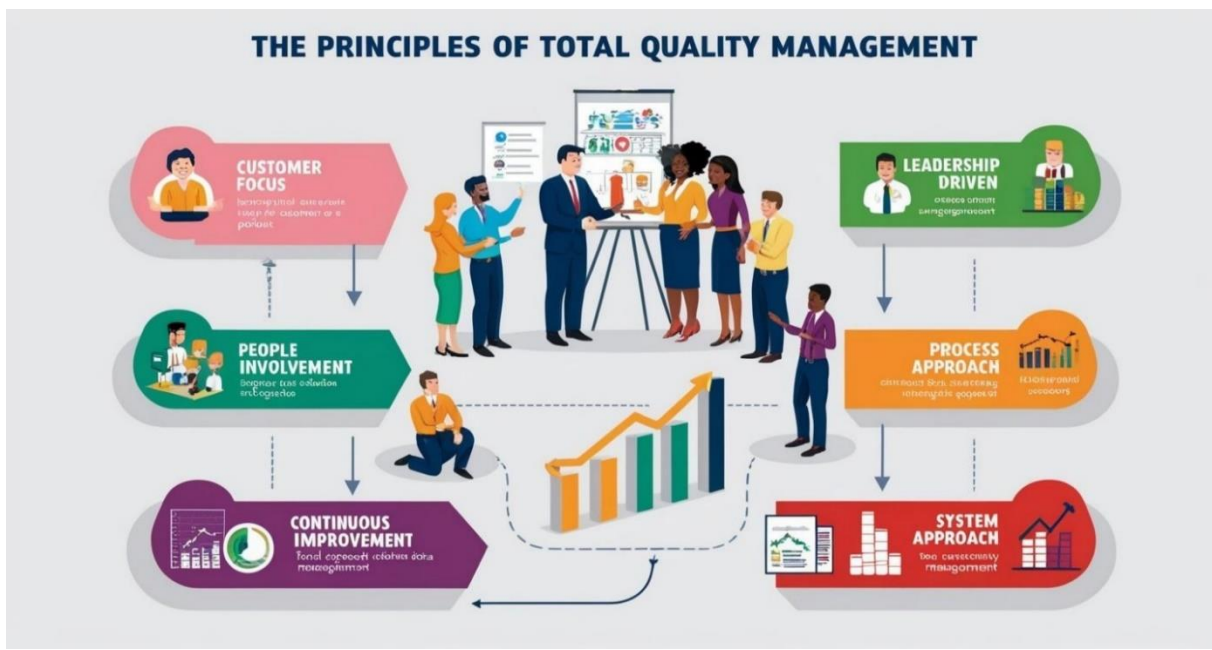


Figure (1). The principles of total quality management.

(1) Customer focus: The organization works to ensure meeting customer requirements and striving to exceed their expectations. In the same context, **(Luthra et al. 2021)** indicated that the organization's success depends on the customer, by identifying their current and future requirements, measuring their satisfaction level, and finally receiving their feedback on the products provided to them. (2) Leadership driven: Leadership works to unify the organization's goal and direction **(Xuan & Trung 2020)** explained that senior management needs to create and maintain an internal environment to fully involve all individuals provide necessary material and moral support, create an organizational climate, and focus on quality objectives by encouraging efforts and good planning to achieve them in terms of time and cost. (3) involvement People: Involving individuals ensures that the organization possesses the tools that contribute to its success. **(Saffar & Obeidat, 2020)** added that individuals at all levels are the essential element in the organization, and their full participation in the quality management system will enable the utilization of their capabilities in achieving its objectives. (4) Process approach: Focusing on effective transformation processes from inputs to outputs. **(Canbay & Akman 2023)** indicated that this management principle is based on processes, through the availability of necessary inputs for the product and defining their course.

Each process has inputs and outputs, which requires the necessary support to achieve the desired results.

(5) Continuous Improvement: Organizations seek to achieve continuous improvement. **(Luburić ,2019)** explained that this principle is considered one of the necessary principles for an organization to maintain current performance levels, respond to internal and external changes, and create new improvement opportunities. For an organization to be continuously successful, it must be able to effectively and

efficiently review and continuously improve its processes and products. (6) Factual approach to decision making: The organization should use data and information analysis for decision-making. In the same context, **(Montgomery 2020)** indicated that through this principle, the organization ensures easy access to accurate and reliable data, as well as the use of appropriate methods for analyzing it, which facilitates top management's decision-making based on facts. (7) System approach to management: It emphasizes that all components of an organization are interconnected and that changes or problems in one part can affect the whole system. **(Noviantoro et al. 2020)** added that relationship management works to improve the organizational performance through identifying relevant stakeholders (suppliers, partners, customers, investors, employees, and communities) and their relationships with the organization, collecting and exchanging information, skills, and resources, and measuring performance and providing performance feedback as needed to enhance continuous improvement initiatives.

2.2 Organizational Creativity

Creativity in general is the ability to generate new and useful ideas related to products and services, processes and management practices, and competitive strategies **(Olszak, et al., 2018)**. Organizational creativity is defined as "the ability to introduce novelty in what it does and how it does it in order to achieve organizational goals, including product, process and service development, paradigm shifts, as well as developing new ways to seize opportunities, solve problems and face internal and external changes"**(Nisula & Kianto, 2018)**. Thus, it involves rearranging knowledge to generate new knowledge that must be transformed into products and services, enabling the organization to lead in entrepreneurship and enhancing organizational innovation **(Gao et al., 2021)**. Organizational creativity is characterized by a set of elements, which are as follows (1) Fluency: producing the largest possible number of ideas about a specific topic in a specific time unit. (2) Flexibility: the ability to change the mental state by changing the situation. (3) Originality: the ability to produce new solutions; in this sense, the creative person does not repeat the ideas of those around them, nor resort to traditional solutions to explore original ideas. (4) Sensitivity to problems: represented in the individual's ability to discover different problems in different situations; the creative person can see many problems in one situation, being aware of errors and shortcomings and sensing problems with acute sensitivity. (5) Analysis: refers to creative or innovative production that involves a process of selection or choice and fragmentation of new work into simple units to be reorganized. (6) Risk-taking: taking the initiative in adopting new ideas and methods, and searching for solutions to them at the same time when the individual is ready to bear the risks resulting from the actions they take and is willing to bear the responsibilities resulting from that **(Schiavone & Villasalero, 2013)**. Subsequently, the concept of the smart organization emerged, defined

as "an efficient organization that contributes to the creation, acquisition, and transfer of knowledge, accompanied by behavioral changes that align with new knowledge and insights."(**Abderrahim et al,2024**). There are a set of factors that help organizations achieve creativity identify (**Akhilesh, 2014**), them in Figure (2):



Figure (2) the Key Elements of Organizations Achieve Creativity

2.3 Job satisfaction

Job satisfaction is the feeling of employees' comfort and contentment towards their work, a concept that has evolved over time as a result of in-depth research and studies in the fields of industrial psychology and management science.

Beginning with a focus on productivity and efficiency in the early twentieth century, through the Hawthorne studies which highlighted the importance of social factors, up to modern theories that explore the influential psychological, social, and cultural factors (**Ahsan & Khalid, 2024**). Employee satisfaction is generally considered the driver for employee retention and productivity. Satisfied employees are a prerequisite for increasing productivity, responsiveness, achieving quality, and providing excellent services.

The level of job satisfaction is influenced by internal and external motivational factors, supervision by senior management, and social relationships with other employees (**Ali & Anwar, 2021**). Job satisfaction can be defined as a feeling of employee's achievements and successes. It is generally believed to be directly linked to productivity and job performance, as well as personal well-being. Job satisfaction means doing work one loves, doing it well, and being rewarded for one's efforts) Dziuba **et al., 2020**) It

also means the general feeling of comfort and satisfaction among employees towards their work, which is achieved through the alignment of their expectations with the benefits and opportunities they receive in the work environment **(Tran & Tran,2024)**.

Improving the quality of work can enhance employee job satisfaction and reduce stress, thus reducing employee turnover rates. It indicates a feeling of contentment, freedom of thought, absence of tension, and a confident approach towards job requirements by employees. It also points to the future and influential concerns of employers and employees in every organization **(Dhamija et al., 2019)**.

Individuals' job output and Customer satisfaction Will reflect their perceptions of their significance and influence within the organization **(Houcine, 2023)**.

Empowerment increases the level of employee satisfaction, increases their ability to control work, the degree of appréciation for work and the sense of responsibility, and contributes to increasing self-confidence, and helps in acquiring new knowledge and skills **(Abdalkarim, 2024)**.

3. Conceptual model and hypothesis development

The following sub-sections are devoted to developing specific hypotheses at the basis of the proposed investigation. The assumed relationships among the studied constructs are graphically shown in Figure (4), representing the conceptual model we will test through our investigation.

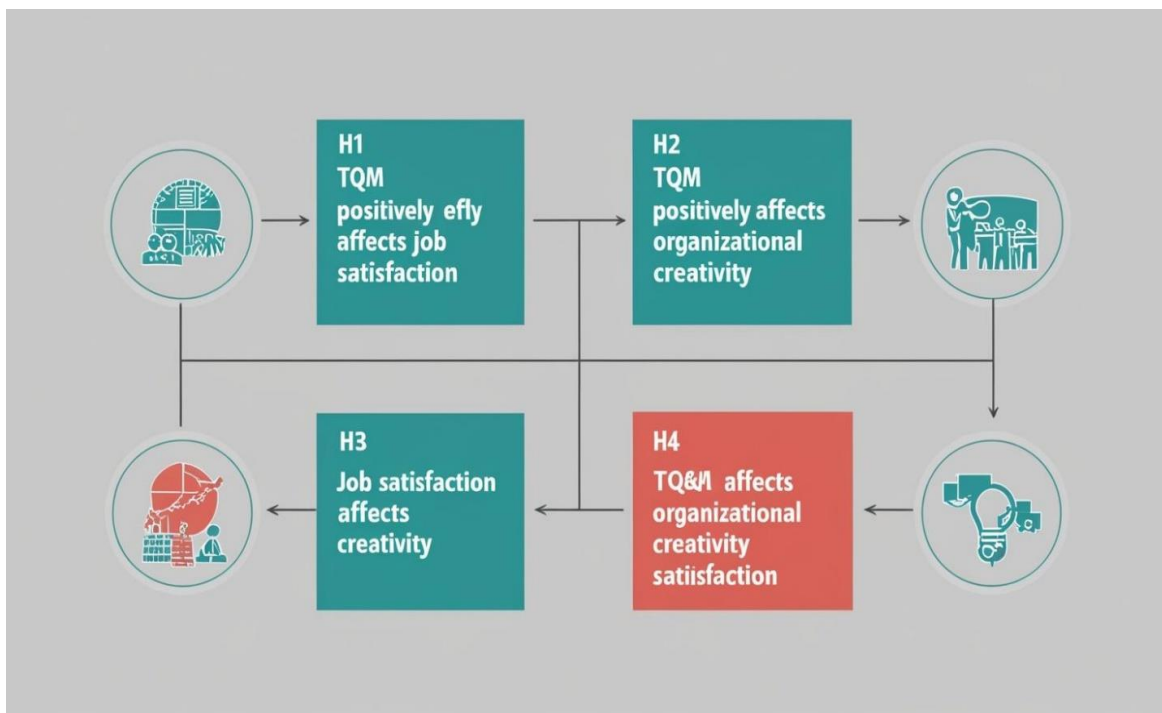


Figure (4). Proposed conceptual model.

3.1: Total Quality Management impacts on Job satisfaction

Job satisfaction is a critical factor for organizational success as it is positively associated with increased productivity, lower employee turnover rates, and improved organizational commitment (**de Menezes, 2011**).

When studying the impact of Total Quality Management on job satisfaction, employee involvement in decision-making processes is a fundamental element of TQM and one of its principles, as well as empowering employees in quality improvement activities (**Yue et al., 2011**). TQM practices contribute to improving organizational effectiveness, increasing customer satisfaction, and increasing profitability. Teamwork, employee participation, and training and development play a vital role in enhancing employees' skills and knowledge, ultimately leading to job satisfaction in the organization (**Ahmed & Idris, 2020**).

In a study conducted by (**Morrow, 1997**), basic principles of Total Quality Management (TQM) were used to examine the relationship between the application of TQM principles and job satisfaction. Using a sample of 2,249 employees in a large organization, the research indicated that TQM principles have desirable consequences on job satisfaction-related outcomes. Research conducted by (**Kaynak, 2003**) showed a positive relationship between teamwork within the framework of TQM and job satisfaction. (**Yang, 2006**) concluded from his empirical study on high-tech Taiwanese companies that TQM led to an improvement in employee satisfaction. (**Ooi et al, 2007**) conducted research to examine the perceptions of 230 employees regarding TQM practices and their implications for job satisfaction within a large Malaysian electronics company. The results revealed that TQM practices such as organizational trust, customer focus, organizational culture, and teamwork have significant effects on job satisfaction. (**Prajogo & Cooper, 2009**) revealed that the people-related aspects of TQM practices were positively associated with employee job satisfaction.

TQM practices contribute to improving organizational effectiveness, increasing customer satisfaction, and increasing profitability. Teamwork, employee involvement, training, and development play a vital role in enhancing employee skills and knowledge, ultimately leading to job satisfaction in the organization (**Ahmed & Idris, 2020**). Based on the above, we derive the following:

H1. Total Quality Management has a positive effect on Job satisfaction.

3.2: Total Quality Management impacts on Organizational Creativity

Total Quality Management (TQM) and organizational innovation are closely related and significantly affect organizational performance. Many studies show that TQM practices contribute to enhancing innovation in products and processes, leading to improved operational and financial performance of organizations (**Ceko, 2021**).

TQM contributes to identifying innovation strategies by focusing on improving processes and products. For example, a study found that adopting process innovation strategies improves operational and financial performance, while product innovation mainly contributes to improving financial performance only.

The results indicate that TQM practices promote the adoption of innovation strategies in products and processes (**Antunes et al., 2017**). Some components of TQM such as continuous improvement, employee involvement, and customer focus have a positive impact on organizational innovation when used correctly, as they enhance innovative outcomes and boost the competitive capacity of organizations (**Abu Salim et al., 2019**). Moreover, research shows that there is a reciprocal relationship between TQM and organizational innovation, where each supports the other in enhancing organizational performance (**Antunes et al., 2021**).

Organizations seeking to achieve excellence through innovation can benefit from implementing Total Quality Management practices, as they help in understanding the relationship between TQM and organizational innovation. This knowledge can assist organizations in developing new strategies that integrate TQM policies and innovation policies to achieve competitive advantage (**Khalfallah et al., 2022**). Based on the above, we derive the following:

H2. Total Quality Management has a positive effect on Organizational Creativity.

3.3: Job satisfaction impacts on Organizational Creativity

One study showed that job satisfaction increases employee motivation towards creativity, which enhances organizational citizenship behaviors (OCB) including innovation and organizational commitment. The study found that job satisfaction is a strong indicator of organizational creativity and that satisfied employees are more capable of innovation and presenting new ideas (**Ghasemy & Elwood, 2023**). Another study confirmed that supervisor support and increased job satisfaction for employees leads to improved organizational commitment and reduced turnover rates, which enhances the creative environment within the organization and increases the likelihood of employees adopting new creative ideas (**Mathieum et al., 2016**).

This study addressed the relationship between the innovative climate in the organization and employees' innovative behavior, and showed that a positive climate in the organization promotes creativity among employees. It also found that psychological ownership plays an important mediating role in this relationship, as employees who feel a sense of belonging and responsibility towards the organization are more creative (**You et al., 2022**).

This study confirmed that job satisfaction plays an important role in promoting innovative performance within the organization. It found that employees who are satisfied with their work are more willing to

adopt and develop new ideas, which enhances the level of organizational creativity in general (**Liu et al., 2019**).

This study examined the impact of supportive organizational climate and job satisfaction on employees' innovative performance. The results showed that a supportive work environment that focuses on continuous learning and development contributes significantly to increasing organizational creativity (**Dawkins et al., 2017**) (**Montani et al., 2014**).

One published study found that a supportive work environment that focuses on employee development leads to increased satisfaction, which enhances their creativity at work. Job satisfaction enhances employee commitment and engagement, which motivates them to present new and innovative ideas within the organization (**Kanapathipillai, 2021**). Based on the above, we derive the following:

H3. Job satisfaction has a positive effect on Organizational Creativity.

3.4: Total Quality Management impacts on Organizational Creativity through job satisfaction as a mediating variable

Total Quality Management (TQM) has a significant impact on the level of organizational creativity, with individual job satisfaction being a mediating factor in this relationship (**Aryoko et al., 2023**). Many studies have confirmed that TQM practices enhance employee job satisfaction, leading to improved organizational creativity.

A study showed that job satisfaction acts as a mediator between TQM and organizational creativity, where TQM practices help create a positive work environment that enhances employee satisfaction, thus increasing their ability to innovate (**Alquqa et al., 2023**). Another study demonstrated that TQM practices positively affect employee satisfaction, which in turn leads to enhanced organizational creativity. The results showed that employee satisfaction can be an important mediator in the relationship between TQM and organizational creativity, as the improved work environment increases employee satisfaction and consequently increases their creativity (**Sciarelli et al., 2020**).

A study conducted on ABBAND Mazandaran Company in Iran showed that TQM has a positive impact on innovative performance through the mediating role of organizational learning. This reinforces the idea that TQM contributes to improving the environment that encourages innovation, which increases employee satisfaction and motivates them to participate in innovative activities (**Nikabadi et al., 2014**).

Another study in the automotive parts manufacturing sector in Thailand indicates that job satisfaction plays an important role in promoting innovative behavior of employees when fair and comprehensive performance evaluation is applied. This means that good total quality management can improve job satisfaction, which in turn enhances organizational creativity (**Na-Nan et al., 2020**). Based on the above, we derive the following:

H4. Total Quality Management has an indirect effect on Organizational Creativity through job satisfaction as a mediating variable.

4. Materials and Methods

This study was conducted as a collaborative research effort between the Republic of Iraq and Algeria. Data was collected from the Algerian industrial sector, specifically at SPA LAFARGE LCM building materials manufacturing company, while the analysis, interpretation of results, and theoretical development were carried out by researchers at the University of Baghdad, Republic of Iraq, with the aimed of analyzing the impact of Total Quality Management (TQM) on organizational innovation, while examining the role of job satisfaction as a mediating variable in this relationship. Given the importance of achieving high quality in institutional performance and promoting innovation within work environments, the study focused on understanding how TQM practices contribute to stimulating an innovative work environment and the extent to which employee satisfaction levels affect this correlation. The study population included all company employees in the Algerian company, totaling 436 employees, representing various administrative and production departments within the organization. To ensure accurate representation of the study population, a simple random sampling method was used to select 300 employees, who were distributed research questionnaires. After retrieving and examining the questionnaires for completeness and validity, the number of valid responses for analysis reached 245, The collected data was then transmitted to the research team at the University of Baghdad, Republic of Iraq, where comprehensive statistical analysis and interpretation of results were conducted, providing a sufficient database for testing research hypotheses and deriving reliable scientific results.

The study was conducted between December 2024 and January 2025, with geographical boundaries limited to the company's headquarters. Regarding subject limitations, the study focused on measuring the relationship between TQM and organizational innovation through specific variables, considering job satisfaction's impact as a mediating factor.

A rigorous research questionnaire was developed to measure the study's key variables, with its design based on reviewing relevant previous literature. It was divided into several sections covering TQM dimensions, job satisfaction levels, and organizational innovation levels. To ensure the research tool's validity, the questionnaire was reviewed by academic experts specialized in management, TQM, and human resources, whose observations were incorporated into the final version before distribution to participants.

To ensure data followed the normal distribution required for advanced statistical analyses, Mardia's coefficient was applied to measure multivariate normality. Results showed all critical values (c.r) were

within acceptable range (-1.501 to 1.211), confirming data normality and enabling further statistical analyses.

To verify the research tool's reliability, McDonald's omega coefficient was calculated using AMOS v24. Results showed all values were within acceptable range exceeding 0.70, indicating high reliability, thus adopting the questionnaire as an appropriate data collection tool.

Confirmatory Factor Analysis (CFA) was used through AMOS v24 to assess the proposed model's fit with actual data, verifying questionnaire dimensions' alignment with theoretical concepts. Factor analysis results showed independent elements' loading coefficients were within acceptable range (0.63 - 0.84), confirming the model's validity for measuring research variables.

Additionally, Path Analysis and Structural Equation Modeling (SEM) were applied using Baron and Kenny's approach to test direct and indirect effects between research variables, enabling researchers to determine TQM's direct impact on organizational innovation and job satisfaction's mediating effect in this relationship.

These statistical and analytical procedures helped provide precise understanding of TQM's operation within the institution and how it can contribute to raising organizational innovation, either directly or through improving job satisfaction, offering practical insights for developing administrative strategies that enhance institutional performance and promote innovation in industrial work environments.

4.1 Field Study Procedures:

4.1.1 Study Population and Sample: The study was conducted as a joint research project between the Republic of Iraq and Algeria. Data collection took place within the industrial sector in Algeria, specifically at the building materials manufacturing company SPA LAFARGE LCM. The study population consisted of all 436 employees of the company. A simple random sample of 300 individuals was selected, from which 245 responses were retrieved, representing the study sample.

4.1.2 Study Limitations:

Temporal Scope: The study was conducted over the months of December 2024 and January 2025.

Geographical Scope: Data were collected at the building materials manufacturing company SPA LAFARGE LCM in Algeria, while analysis and interpretation of the results were conducted in collaboration with researchers from the University of Baghdad, Republic of Iraq..

Thematic Scope: The study focuses on the mediating role of job satisfaction in supporting the relationship between Total Quality Management and organizational innovation.

4.1.3 Study Instruments: A questionnaire was designed based on the details presented in the table:

Table 01: Design of the Study Instrument and Coding of Variables.

Latent variables		Coding	Observed variables	number
Total Quality Management (TQM)	Leadership	LSH	LSH 1 – LSH 5	5
	Employee relations	ERL	ERL 1 – ERL 4	4
	Customer focus	CUF	CUF 1 – CUF 5	5
	Flexibility	FLX	FLX 1 – FLX4	4
Job Satisfaction (JSF)			JSF 1 – JSF 5	5
Organizational Creativity (OC)			OC 1 – OC 5	5

Source : Prepared by researchers.

4.2 Assumptions of Confirmatory Factor Analysis (CFA):

4.2.1 Face Validity of the Study Instrument: The research instrument was reviewed and refined by professors and reviewers with expertise in research methodology and human resource management. Their feedback and suggestions were incorporated into the necessary revisions.

4.2.2 The Multivariate Normal Distribution for Data:

Table 02: Results of Mardia's Coefficient.

	N° of variables	Multivariate	c.r
TQM	4	-0.214	-1.501
JSF	1	4.302	1.211
OC	1	1.122	0.405

Source: Prepared by researchers based on AMOS.V24 output.

As observed from the table above, all critical ratio (c.r.) values range between -1.501 and 1.211, and none exceeded the conventional threshold (± 1.96). Therefore, we accept the null hypothesis (H0) which states that the data are normally distributed.

4.2.3 Reliability of the Study Instrument: McDonald's Omega coefficient was used to assess reliability, utilizing the AMOS v24 software. The results are presented in the following table:

Table No. 03: Results of the “McDonald’s Omega” factor for the study tool.

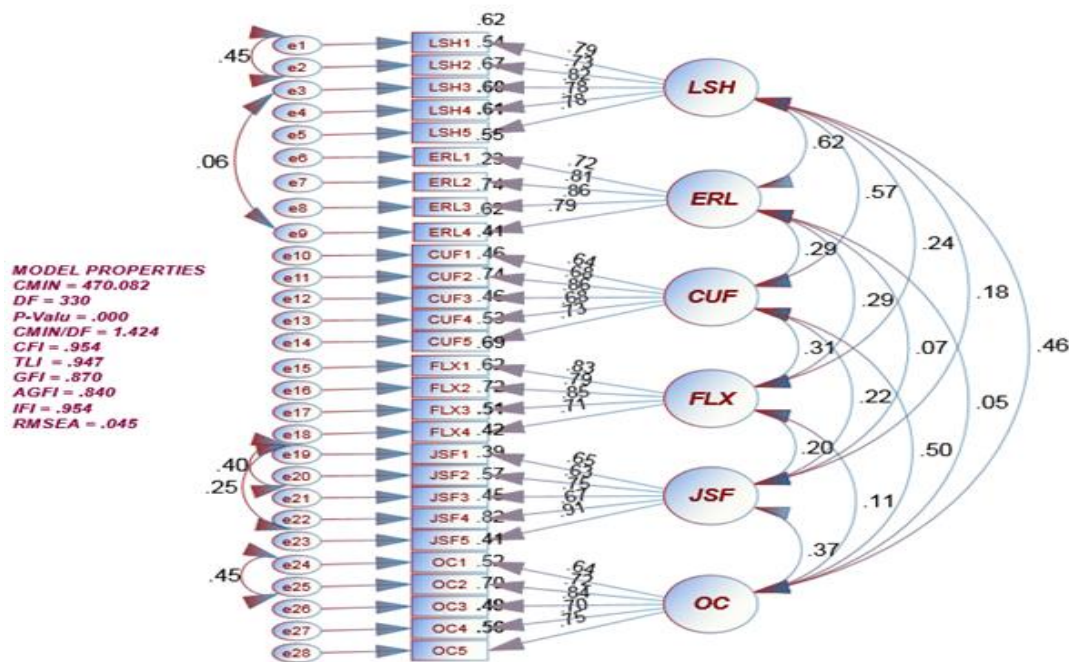
Variable	Dimension	Ferries	ω
Total Quality Management (TQM)	LSH	5	81.2
	ERL	4	85.4
	CUF	5	76.1
	FLX	4	82.2
Job Satisfaction (JSF)	JSF	5	78.8
Organizational Creativity (OC)	OC	5	80.6

Source: Prepared by researchers based on findings from the MACRO-OMEGA outputs.

Table 03 demonstrates that the omega (ω) reliability coefficients for all variables included in the study fall within the range of 76.1 to 85.4. These are considered high and acceptable values, surpassing the 70% threshold, which confirms the reliability of the study instrument. Therefore, its use for the field study within the investigated institution is warranted.

4.3 Confirmatory Factor Analysis of the study model (CFA)

Figure 5: Design of the standard model for the study using CFA



Source: Prepared by researchers based on AMOS.V24 output.

Figure 5 represents the complete standardized model of the study variables, illustrating how the items

(observed variables) are related to the latent variables. The saturation values for these items range between 0.63 and 0.84, which are considered acceptable within this field, indicating the ability of all questions to explain the dimensions they are loaded onto. As we also observe in the same figure, there are other variables in the form of circles representing the measurement error, or what is known as the effect size (e1, e2, etc.).

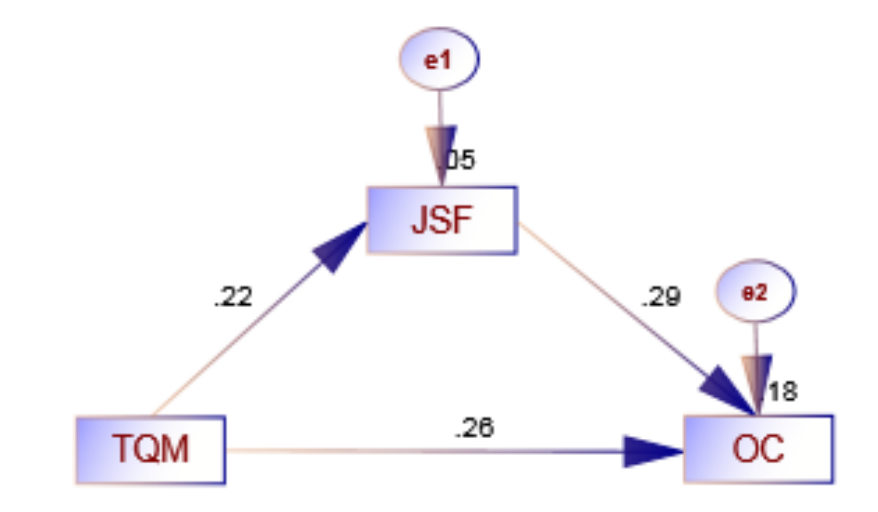
Regarding the statistical significance of the chi-square index, which was statistically significant ($X^2 < 0.05$), it cannot be relied upon in all cases to assess model fit due to the large sample size. However, since the normed chi-square is statistically significant within its acceptable range ($1 < \text{cmin/df} < 2$), the model is valid and fits the data.

Furthermore, we observe that the remaining fit indices ($\text{CFI} = 0.95$, $\text{IFI} = 0.954$, $\text{TLI} = 0.947$) are achieved at a good level. This is with the exception of the Goodness-of-Fit Index ($\text{GFI} = 0.87$) and the Adjusted Goodness-of-Fit Index ($\text{AGFI} = 0.84$), which remain below the desired level for good fit, due to their sensitivity to sample size and the number of parameters to be estimated in the model. However, they are at an acceptable level of fit. Overall, the standardized model has been achieved and fits the data well, therefore we can proceed to the structural model of the study in order to analyze the data and test the hypotheses.

4.4 hypothesis tests and interpretation of results:

Path analysis and the Baron & Kenny approach to structural equation modeling (SEM) were employed using AMOS v24 to simultaneously examine the direct and indirect effects between study variables.

Figure 06: Path Analysis Model of Study Variables



Source: Prepared by researchers based on AMOS.V24 output

Figure 06 illustrates the path analysis model for the study variables. The regression coefficients shown on the three paths indicate a positive direct effect between Total Quality Management (TQM) and both organizational innovation and job satisfaction. Additionally, there is a direct effect between job satisfaction as a mediating variable and organizational innovation as a dependent variable in the study. This is evidenced by the positive values of all three path coefficients (0.22, 0.26, 0.29). To determine the statistical significance and explanatory power of this effect, we refer to the following two tables.

Table 04: Direct Effect Estimates Between Study Variables

Variable	Estimate	S.E.	C.R.	P
JSF <--- TQM	.218	.041	11.348	***
OC <--- TQM	.345	.034	4.211	***
OC <---- JSF	.415	.024	6.402	***

Source:**0.05>0.01 , * P>0.001 , ** P>*** P**

Prepared by researchers based on AMOS.V24 output

Table 4 presents a summary of regression coefficient values (β), standard error (S.E.), and critical ratios for the t-statistic (C.R.). These values can be compared against a minimum threshold of 1.964, or alternatively, against P-values (0.05) to interpret the relationship between the variables. A detailed analysis of the table results and the testing of the study's hypotheses are outlined below:

1. The regression coefficient for the first path was 0.218, which is statistically significant at the 1% level of significance. The critical ratio (C.R.) for the t-statistic was 11.348, also statistically significant, as it exceeds the standard value of 1.964. Therefore, the first hypothesis is supported, indicating a statistically significant direct effect between Total Quality Management (TQM) and Job Satisfaction within the SPA LAFARGE LCM manufacturing organization.
2. The regression coefficient for the second path was 0.345, which is statistically significant at the level of significance ($P < 1\%$). The critical ratio (C.R.) was 4.211, which is also statistically significant, as it exceeds the minimum value of 1.964. This supports the second hypothesis, indicating a statistically significant direct effect between Total Quality Management (TQM) and Organizational Innovation within the SPA LAFARGE LCM manufacturing organization.
3. The regression coefficient for the third path was 0.415, which is considered robust and statistically significant at the 0.05 significance level. Additionally, the critical ratio (C.R.) is greater than 1.964. Thus, the third hypothesis of the study is confirmed, indicating a statistically significant direct effect between Organizational Innovation and Job Satisfaction within the organization under study.
4. To test the mediating effect of the intermediary variable (Job Satisfaction) on the relationship between the independent variable (Total Quality Management) and the dependent variable (Organizational Innovation), we will refer to Table 5.

Table 05: The Direct, Indirect Impact and Overall Effect of Study Variables

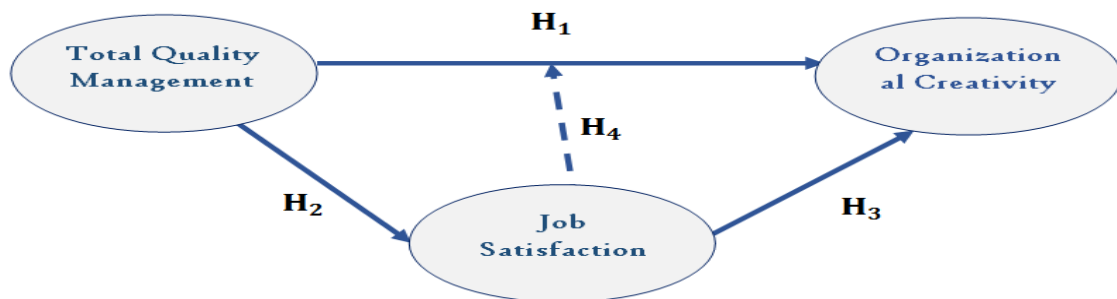
Path	Direct Effects	Indirect Effects	Total Effects	Conclusion
OC <---JSF <--- TQM	.526	.09**	0.616	Partial Mediation
P-Valu	0.001	0.002	0.003	
*** P>0.001, ** P>0.01, * P>0.05, nothing: P The effect is not significant				
Indirect Effects = 0.218 * 0.415				
Total Effects = Direct Effects + Indirect Effects				
= 0.526 + 0.09				

Source: Prepared by researchers based on AMOS.V24 output

Table 05 reveals a significant total effect between Total Quality Management (TQM) and Organizational Creativity (OC) in the absence of the mediating variable, Job Satisfaction (JSF), with a significance level of 0.003. Similarly, the direct and indirect effects are also significant, with significance levels of 0.001 and 0.002, respectively. Furthermore, the direct effect (0.526) is larger than the indirect effect (0.09), indicating that job satisfaction partially mediates the relationship between TQM and organizational creativity.

Final Study Model:

Figure 7: " Final Study Model "



Source: Prepared by researchers

Figure 07 above illustrates the final model that was empirically tested in this study. This model allowed us to examine four hypotheses:

H1: There is a direct effect of Total Quality Management (TQM) on Organizational Innovation.

This hypothesis was statistically confirmed through analysis results showing a strong direct positive effect of TQM on organizational innovation. Path analysis results showed that the direct effect coefficient ($\beta = 0.345$) was statistically significant at ($p < 0.001$), indicating that implementing TQM principles such as continuous improvement, employee participation, and customer focus contributes to enhancing innovation within the organization. This hypothesis is accepted and supported by empirical evidence in the study.

H2: There is a direct effect of Total Quality Management on Job Satisfaction.

Statistical analysis revealed a strong positive relationship between TQM and job satisfaction, where path analysis showed that the direct effect coefficient ($\beta = 0.218$) was statistically significant at ($p < 0.001$). The study highlights that TQM implementation promotes a positive work environment, where practices such as training, appreciation, and employee empowerment lead to increased satisfaction. This

hypothesis is accepted based on strong empirical evidence.

H3: There is a direct effect of Job Satisfaction on Organizational Innovation.

Results indicate a strong direct effect of job satisfaction on organizational innovation, with a direct effect coefficient of ($\beta = 0.415$) at statistical significance ($p < 0.001$). This supports previous studies stating that more satisfied employees are more creative and more willing to present new ideas, and that a supportive work environment enhances innovation. This hypothesis is accepted as statistical analysis proved the relationship's validity.

H4: There is an indirect effect of Total Quality Management on Organizational Innovation through Job Satisfaction.

This hypothesis was tested through indirect effects, where the indirect effect coefficient (0.09) indicates a partial mediating role of job satisfaction between TQM and organizational innovation. In other words, TQM directly affects innovation, but it also enhances innovation indirectly through improving job satisfaction.

This hypothesis is accepted with evidence of indirect effect, although the direct effect of TQM on innovation is stronger.

All four hypotheses are supported by empirical evidence and statistical path analysis. The research confirms that TQM plays an important role in enhancing both job satisfaction and organizational innovation, with job satisfaction playing a partial mediating role between TQM and organizational innovation.

5. Discussion

This study aims to analyze the relationship between Total Quality Management (TQM) and organizational innovation, focusing on job satisfaction as a mediating variable. Based on the findings, the relationship between these variables can be interpreted and explained, indicating how they align with or differ from previous studies, while providing practical insights to help organizations improve their management and organizational strategies.

The study results indicate a strong positive influence of TQM on organizational innovation levels within the institution. Statistical data confirms that applying TQM principles, such as customer focus, continuous improvement, and employee empowerment, enhances the creative work environment, encouraging employees to develop new ideas and improve organizational processes. These findings align with previous studies like Antunes et al. (2021), which confirmed that TQM practices contribute to enhancing innovation strategies within organizations.

This relationship can be explained by TQM's reliance on systematic organizational approaches based on promoting continuous improvement culture and positive interaction between employees and management, leading to a more innovation-supportive work environment. Moreover, companies adopting effective quality systems provide employees greater opportunity for decision-making participation, enhancing their sense of ownership and responsibility towards organizational development and new ideas implementation.

Statistical analysis results show that job satisfaction plays a significant role in enhancing TQM's impact on organizational innovation. Employees who feel satisfied with their work environment and

management policies are more inclined to participate in innovation and development processes. These findings support previous studies, such as Ghasemy & Elwood (2023), which confirmed that job satisfaction levels are closely linked to employees' creative behavior, as satisfaction motivates workers to adopt new ideas and improve operational processes within organizations.

This can be explained by TQM policies that promote organizational justice, continuous training, and job appreciation leading to increased employee satisfaction, creating a more positive environment conducive to creative solutions. Additionally, companies providing continuous learning opportunities and granting employees autonomy in performing their tasks enhance their sense of achievement, making them more willing to participate in product and organizational process development.

The study found a direct positive relationship between TQM and job satisfaction, where implementing TQM strategies leads to improved work environment, positively reflecting on employee wellbeing and job satisfaction levels. These results align with studies like Ahmed & Idris (2020), which indicated that implementing TQM principles contributes to reducing turnover rates, increasing organizational commitment, and improving work-life quality.

This relationship can be explained by organizations adopting TQM placing employees at the center of attention, working to enhance transparency, improve reward systems, and support team spirit, creating a more positive and interactive work environment. Additionally, motivational leadership and effective communication between administrative levels contribute to improving employee experience within the organization, enhancing their loyalty and engagement in achieving organizational goals.

Results showed an indirect effect between TQM and organizational innovation through job satisfaction, meaning TQM's positive impact on innovation occurs not only directly but also through improving work environment and increasing employee motivation. This conclusion agrees with Sciarrelli et al. (2020), which confirmed that achieving high job satisfaction levels leads to increased adoption of creative ideas within organizations, especially when employees are supported and encouraged to innovate.

This effect is explained by improved working conditions, job appreciation, and development opportunities motivating employees to exert greater effort in creative thinking, as they feel supported in experimenting, learning, and contributing new ideas without fear of failure or punishment. Thus, TQM leads to creating an innovation-stimulating work environment through improving job satisfaction levels, enhancing employee contribution to creative activities within the organization.

Comparing this study's results with previous literature, they support most recent research trends confirming TQM's importance as a tool for enhancing institutional creativity. For example:

- Abu Salim et al. (2019) confirmed that TQM improves organizational performance through enhancing product and service innovation.

- Na-Nan et al. (2020) indicated that achieving job satisfaction enhances employee creative thinking, especially in industrial sectors.
- Aryoko et al. (2023) found that TQM positively relates to work environment improvement, contributing to increased organizational innovation.

Thus, this study's results align with previous research confirming that organizations adopting TQM achieve higher levels of organizational innovation, particularly when employee satisfaction is enhanced.

6. CONCLUSION

The study results indicate that Total Quality Management plays a fundamental role in enhancing organizational creativity within industrial institutions. Data collected from SPA LAFARGE LCM employees showed that implementing total quality practices directly contributes to raising innovation levels within the organization, as these practices help improve processes and develop a culture of continuous improvement, creating a work environment supportive of innovative ideas and stimulating employee creativity.

The study also revealed that Total Quality Management positively affects job satisfaction levels, as quality standards implementation helps provide a more equitable and motivating work environment through enhanced reward systems, providing training and professional development opportunities, and promoting team spirit, which increases employee commitment and drives them to perform more creatively. The results also showed that job satisfaction plays a mediating role in the relationship between Total Quality Management and organizational creativity, as the positive work environment resulting from implementing total quality motivates employees to participate in innovation processes and improve institutional performance.

The study indicates that institutions wishing to enhance their innovative capabilities should focus on implementing total quality practices in a strategic manner that ensures not only improved product and service quality but also provides a supportive work environment for their employees, leading to increased job satisfaction, which positively reflects on creativity levels within the organization.

In light of increasing competition in industrial markets, it has become necessary for institutions to adopt a comprehensive management approach focusing on sustainable quality while ensuring employee participation in decision-making and implementing continuous improvements. This study confirms that effective quality management not only benefits operational processes but also plays a vital role in stimulating institutional creativity by creating a work environment that encourages renewal and innovation, enhancing the institution's ability to adapt to changes in the work environment and achieve sustainable competitive advantage.

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