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## **The impact of entrepreneurship on total quality management: An empirical study on the employees of public universities in Jordan**

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### **ABSTRACT**

The research's goal is to evaluate the impact of entrepreneurship on Total Quality Management via an empirical examination of personnel from Jordan's national institutions. The research used explanatory analyzing methodology (quantitative), which was applied to the study sample, which consists of (unit/department manager, department head, supervisor or engineer, administrative employee). The sample was random, amounting to (375) participants according to Stephen Thompson's equation. The questionnaires were distributed to the study sample: (345) were retrieved, (12), invalid for analysis, were excluded and (335) valid responses, from the study community, were analyzed, with a percentage of (89.3%). The information was analyzed using the Statistical Package for Social Sciences (SPSS) application. The research found a statistically meaningful impact at the level of relevance ( $\alpha \leq 0.05$ ) between entrepreneurship and Total Quality Management in public universities in Jordan, where the value reached ( $R^2 = 16.4\%$ ). Moreover, the study recommended the need to work on investing and transforming new innovative ideas and solutions, turning them to useful services and processes that can be used. Other recommendations included increasing the concern for continuous improvement of its services and processes, and working to provide a suitable environment (working environment) for the creation of methods and ideas.

**Keywords:** entrepreneurship, total quality management, Jordanian public universities

### **1.1 Introduction**

Total Quality Management (henceforth TQM) is the use of the four administrative processes (planning, organizing, directing, and controlling) to meet the needs of the customer or consumer in an efficient and effective way in order to achieve their objectives, taking into account post-consumer follow-up, acquiring the user's assessment of the good or service, and working to keep improving the service performance.

TQM is a contemporary idea that has recently received awareness in the administration of public institutions and among academic researchers as one of the preferred management techniques. (Al-Maliki, 2018).

The Industrial Revolution described it as a contemporary management philosophy based on a collection of contemporary principles, values, principles and standards in management science. It also combines traditional administrative means, ideas, innovative efforts, skills, capabilities and specialized technical and administrative capabilities in order to raise the level of performance and the continuous improvement and development of the performance of universities (Adjei and Mensah, 2016). The application of TQM methodologies in public universities showed great success by controlling the duration taken for the implementation of their activities, procedures and the quality of their operations, and improving their performance, which is reflected in improving the performance (Qasoul, 2017).

Entrepreneurship has received wide global attention in the academic sector in the universities in various countries because of its wide contribution to achieving economic development, achieving total quality management, and increasing competition. This contributes to finding university services that meet the needs and expectations of the individuals in the societies. There is no doubt that many public and private universities entrepreneurs contributed to its development (Al-Nusour and Al-Kharrabeh, 2020). Their entrepreneurial ability enabled them to establish and perpetuate university trends, procedures and activities, maintain their stability and continue to develop. This prompted the higher administrations in public universities to direct their policies and laws towards encouraging entrepreneurship in all its dimensions. This is an important way towards achieving total quality management, and to confront the risks to which the universities at different stages of their lives is exposed. Consequently, the public universities have increased the interest in the entrepreneurship due to its importance in achieving the TQM (Au et al., 2022).

Public universities stand out through their ability to adopt and apply international standards, especially the comprehensive quality standard, by motivating the application of entrepreneurship strategies, and benefiting from the human competencies working for them. This is done in order to implement the risk management standard to improve the quality of services provided by the operations that implement them to reach a high level of total quality management. This is achieved through providing accurate information and data on its operations to maintain a competitive position with other universities by improving the quality of their operations – a thing that enhances their internal and external competitiveness. Therefore, TQM is regarded as one of the most important methodologies that public universities must maintain. The more universities are interested in applying total quality management, the greater their ability to achieve their goals.

### 1.2 Problem of the Study

The underlying major question may be used to construct the research problem:

What influence does enterprise have, as indicated by its aspects ( risk tolerance , creativity, proactivity, and innovation ) on the TQM represented by its dimensions (senior management commitment, continuous improvement, collective work) on the employees of public universities in Jordan?

The following sub-questions arise from this question:

1. What is the level of entrepreneurship in public universities in Jordan?
2. What is the level of the TQM in public universities in Jordan?
3. What influence does enterprise have, as indicated by its aspects ( risk tolerance , creativity, proactivity, and innovation ) on the TQM represented by its dimensions (senior management commitment, continuous improvement, collective work) on the employees of public universities in Jordan?

### 1.3 Objectives of the Study

This study aims to demonstrate the impact of entrepreneurship, as signified by its aspects (creativity, proactivity, risk tolerance, and innovation) on overall value management, as represented by its aspects (continuous improvement, collective work, senior management commitment), on the employees of public universities in Jordan, as well as to determine the amount of application of entrepreneurship techniques and TQM methods in Jordanian general universities.

### 1.4 Significance of the Research

The study's academic significance arises from the significance of entrepreneurship that contributes to improving total quality management, which requires commitment to the application of the set of foundations and rules for the international standard (total quality management; To achieve a high standard of quality, and to identify the correct ways to improve it, as the quality management methodology is considered Comprehensive management philosophy and continuous motivating factors for the performance of public universities. This study provides the senior management in public universities with the necessary information and data regarding entrepreneurship strategies, as well as TQM standards.

### 1.5 Theory and Hypothesis Development

First: The impact of entrepreneurship on the total quality at the public universities of Jordan.

Primary Hypothesis (H01): Here is no statistical relevant impact at the significance level ( $\alpha < 0.05$ ) for entrepreneurship reflected by its aspects (innovation, creativity, proactivity, risk tolerance) on the TQM represented by its dimensions (senior management commitment, continuous improvement, collective work) on the staff of Jordan's public colleges.

TQM refers to a set of organizational and comprehensive processes for thinking and development for public universities through implementation of environmentally overall quality control concepts and underpinnings, concepts and strategies. It is considered an entry point for continuous improvement of activities, practices and events by achieving their requirements (senior management commitment, continuous improvement, collective work and focus on customers). The two researchers defined it as a set of rules, foundations and methodologies followed by the administration of public universities in order to adjust its outputs by focusing on the operations, activities and tasks of universities. Al-Nesour and Al-Kharrbeh (2020) pointed out that entrepreneurship refers to exclusiveness and not relying on traditional methods used in outputs, providing services and applying processes, and following unique methods that will develop work and improve performance. Moreover, they defined it as following new and innovative ways in taking procedures and methods for applying TQM methodologies.

Imam et al. (2022) pointed out, in their study, Impact of TQM on Entrepreneurship, which sought to discover the significance of organizational innovation in the link among the aspects of overall performance and the practice of entrepreneurship in firms.

The research revealed that organizational creativity (being an interacting mediator variable in the link between overall quality and its aspects) had substantial impacts (persuasion and support of senior management –

employee participation and motivation - employee training and qualification - information system and data collection - strategic planning and continuity of improvement)) and the practice of entrepreneurship. In their study, which aimed at to support the success of the entrepreneurship through the application of the TQM model for small and large enterprises, Kriemadis et al. (2001) emphasized on the influence of entrepreneurship on the use of TQM techniques. The research revealed that without a quality managing philosophy, organizational procedures, , strategic goals, and entrepreneurial vision and talents, it wouldn't be possible to create economic progress. Furthermore, the study emphasized the importance of the TQM in the success of the organizations by adopting the philosophy of TQM.

Second: The impact of innovation in entrepreneurship on TQM in the Jordanian public universities.

Khawaldeh (2020) indicated that innovation refers to the process of finding creative and exceptional solutions to produce products, provide services, and solve problems to meet needs and requirements. The two researchers define it as the process through which innovative, creative and non-traditional solutions are found in the performance of business, the manufacture of goods, the rendering of services, and the resolution of issues.

H01-1: At the level of significance ( 0.05), there is no statically important relationship between innovation and TQM at Jordan's universities.

The objective of Shawky et al.2022.'s study was to examine the influence of institutions and qualitative variables on innovation in Arab nations. Their research found that innovation has an effect on the organization's quality variables and that innovation is impacted by organizational quality. Additionally, it was shown that liberty of speech and responsibility had little effect on creativity. Hudnurkar et al. (2022) sought to determine the structural link among total quality management (TQM) and corporate sustainability (CS) by evaluating the function of innovation capability (IC). In this research, TQM was assessed by production modeling and forecasting and process control of client connections. The research discovered a clear correlation among TQM and innovation. Furthermore, the study discovered that TQM has a positive influence on achieving long-term organizational development. This may generate a culture of innovation that stimulates the circular social economy.

Third: The impact of creativity in entrepreneurship on TQM in Jordanian public universities

Bolzani and Luppi (2021) pointed out that creativity refers to the ability to generate a set of ideas that are suitable for solving a problem during a specific period of time, while the two researchers define it as the ability of the employees to find new ideas, methods and ways to solve the problems they face at work during a short period of time.

H01-2: There is no statistically significant effect at the significance level ( $\alpha \leq 0.05$ ) for creativity on the TQM in public universities in Jordan.

On the one hand, Herbo (2022) highlighted the creative leadership in the organization in the application of TQM as a basic requirement of change and success. The study demonstrated the impact of creativity in the application of TQM by focusing on two dimensions. The first is social. It is related to the human resources and focuses on the participation of all workers in decision-making, setting goals, continuing education and training and motivation. The other is technical. It is concerned with improving and developing work methods, improving the quality of outputs, based on customer's expectations in order to keep pace with the intense competition in the market, especially with the increasing awareness of consumers in choosing a special item. On the other hand, the study of Al-Qershi et al. (2022) aimed to show the impact of the green creativity on business sustainability through the mediating variable (total quality management). The study proved the impact of creativity on the application of TQM methodologies: the study concluded that there is a positive impact of creativity on TQM by expanding knowledge of TQM.

Fourth: The impact of proactivity in entrepreneurship on TQM in Jordanian public universities.

Alkharbeh, (2022) pointed out that proactivity refers to the process of discovering new opportunities at the right time to solve problems before others, and searching for new capabilities and opportunities that achieve the growth of the organization. Nevertheless, the two researchers define it as the process of finding opportunities, ideas, solutions and new ways before competitors.

H01-3: At the significant level ( 0.05), there is no statically significant influence of proactive behavior on TQM at Jordan's governmental universities.

In view of academics requirements, Harb (2018) performed a research to assess the academic partners' demands for specialized abilities and technological information in the Deanship of Preparatory Programmes at Imam Muhammad bin Saud Islamic University. The study demonstrated the impact of proactive behavior in TQM, particularly in the preparation and implementation of lecturing, learning and assessment programmes and aids, scientific study and managing of research studies, growth, and quality. In addition, Segarra-Ciprés et al. (2019) investigated the extent to which proactive employee behavior contributes to the innovation performance of organizations operating in high-tech industries. The research indicated that proactivity has a favorable effect on developing and enhancing performance, which is one of the TQM characteristics. The findings demonstrate a significant and positive association among proactive actions and both process and product innovation success. These management methods affect the link among proactive behavior and product innovation in a good manner.

In addition, the findings indicated that managers must emphasize proactive behavior in selecting and quality management processes..

Fifth: The impact of risk tolerance in entrepreneurship on TQM in Jordanian public universities

Ward and Warshak (2021) indicated that risk tolerance refers to the desire to find appropriate solutions to problems while taking full responsibility for the solutions provided. However, the two researchers define it as the ability to manage business in light of risks while taking full responsibility for the business.

H01-4: There is no statistically significant impact ( 0.05) for risk tolerance on TQM in Jordanian public universities at the level of analytical relevance.

Mohsen and Bahi (2021) aimed to develop a vision and proposal to activate the role of universities and educational institutions in the developing and supporting entrepreneurship and innovation. The study found the support provided by universities is very important, which would bring entrepreneurship to advanced stages. The result will be the progress and prosperity of the individual, society and the state alike. This in turn supports the application of TQM through several points (supporting innovations and inventions through sober scientific research, providing research and studies related to the business sector, enabling entrepreneurs to access information sources easily, embracing universities for fledgling projects and accompanying them until they grow, training the human element in a way that supports innovation, spreading the culture of entrepreneurship and innovation).

Al-Fleet and Bahr (2021) did research to determine the significance of the proper management of material and financial resources for entrepreneurial initiatives and the influence this has on the effectiveness of such operations. The research revealed that the effective and sound management of the represented material resources and budgetary resources of pioneering initiatives has a significant impact on the quality of these operations in terms of their expansion and sustainability. In addition, the research stressed the significance of using TQM approaches.

## 1.6 Research Design, Sample and Procedures

This research used an explanatory methodology and utilized a straightforward random sampling strategy. The sample consisted of (unit/department manager, department head, supervisor or engineer, administrative staff) from public institutions in the Central Region, totaling 375 items. The study sample included a collection of leadership and supervisory positions, and the response rate was 89.3% consisted of (unit/department manager, department head, supervisor or engineer, administrative staff) from public institutions in the Central Region, totaling 375 items. The study sample included a collection of leadership and supervisory positions, and the response rate was 89.3%. A relevance level of 0.05 was used to evaluate the findings of the tests, which equates to a confidence level of 95%. This investigation was performed on a basic random sample. Using the Steven K. Thompson formula, the number of people in the study was determined (Thompson, 2012).

## 1.7: Data Analysis and Results

The specific algorithmic method was used, and the research model was developed depending on an examination of prior studies. The study apparatus was developed with the input of a team of reviewers and specialists. Those employed at public universities in the Central Region of Jordan were the primary sources of data for the research.

For the purpose of validating the study apparatus, the value of Cronbach's alpha coefficient was computed to reflect the degree of internal consistency of the study paragraphs and the quality of the questionnaire's structure and coherence.

Cronbach's alpha coefficient values varied from (0.836) to (0.605), with (0.836) being the highest and (0.605) being the lowest. With a total of 35 paragraphs, the overall score was 0.857, which is a great value.

## 1.8 Study Results

### 1.8.1 Results of the characteristics of the study population

The research looked at the members of the study society's "social gender, age group, educational qualification, years of experience, and job title," among other things. Based on this information, it was determined that men dress up the majority of the research sample members, with 78.5% compared to 21.5% for females. With 49.3%, the age group of 35–45 years comprises the biggest proportion of the research sample members. Those under 25 years of age had the lowest proportion (2.4%). The group with a bachelor's degree makes up the majority of the research sample, accounting for 71.9%, while those with technical education and a scientific qualification make up the smallest proportion, accounting for 3.6%. The group whose years of experience ranged from 11 to 14 years represented the majority of the research sample participants with a rate of 87.8%, while those with a duration of five years or less represented the smallest proportion with a rate of 1.2%. The category whose work title is "administrative staff" comprises the majority of the research sample participants with a rate of 76.4%, while the group whose job title is "unit/department director" comprises the smallest proportion with a rate of 0.9%.

### 1.8.2 Arithmetic means and standard deviation

First: Measures of central tendency and dispersion for entrepreneurship that risk tolerance dimension obtained a high agreement degree of (3.95), then came in second rank creativity dimension and obtained an agreement degree of (3.89). Then, the innovation dimension followed with an agreement degree of (3.81). Finally, proactivity dimension ranked with an agreement degree of (3.77). This is due to the support of the public university administrations of the research and development operations to encourage innovation and the integration of employees in solving the problems that impede work, and to motivate them continuously to achieve creativity and innovation.

The university takes proactive measures to solve problems and adapt to the expected conditions later, it provides enough space to accommodate work tools to facilitate the sequence of activities. It is also keen to complete its activities on time, but it needs to provide a suitable environment (working environment) to invent new methods, ideas and solutions. Moreover, it is interested in sending some employees for external courses to develop their creative skills and to improve the processes of forecasting potential environmental variables and future market demands before their competitors. It also anticipates the future demands before their competitors, and it works constantly to improve the quality of their outputs to be able to compete.

Second: Arithmetic means and standard deviation of TQM that the dimension of the senior management commitment obtained a high degree of agreement reached (3.97), while the dimension of collective work came in the second rank and obtained a high degree of agreement (3.93). The dimension of continuous improvement ranked last with a high degree of agreement (3.92). This is due to the fact that public universities provide standards for total quality, and are interested in diagnosing and analyzing problems, and constantly review policies and procedures to ensure continuous improvement, and support ideas related to protecting their outputs from risks with the aim of continuous improvement, and allow exit from routine in order to improve service for Students. These universities also conduct various surveys to know the level of student satisfaction, but it needs to be more careful in order to refine its methods in light of suggestions from appropriate authorities with the aim of continuous improvement and encouraging employees to express their opinions.

### 1.8.3 Testing the hypotheses of the study

It includes the following:

First: Testing the main hypothesis

Ho.1 The t-test reveals that the sub-variables of entrepreneurship, which are its dimensions (innovation, creativity, proactivity, and risk tolerance), significantly affect the overall quality of those dimensions (2.382 and 4.222) with t-values between 0.05 and 0.05. Each of them is statistically significant at the 0.05 level. The correlation coefficient between entrepreneurship and its aspects of total quality was discovered to be ( $R = 0.405$ ), while the coefficient of persistence was discovered to be ( $R^2 = 0.164$ ), indicating that entrepreneurship, as an independent variable, explains 16.4% of the variance in the dependent variable, total quality. At the 0.05 level of significance, the calculated F value was 16.231.

The order of input of the independent variables into the regression equation was displayed in a stepwise multiple regression investigation to determine the relevance of each independent variable independently in the influence of entrepreneurship on overall quality.

the characteristics of the independent variable "entrepreneurship." Risk tolerance rated top and explained 8.4% of the variation in the dependent variable "total quality", whereas innovation ranked second and explained 13.6% of the variance in overall quality in conjunction with risk tolerance. Proactivity placed third, alongside risk tolerance and creativity, and it accounted for 15% of the difference in overall quality. Creativity placed fourth alongside risk tolerance, innovation, and proactivity, and it accounted (16.4%) of the variation in overall quality. The null hypothesis is therefore rejected in favor of the alternative hypothesis. That is, "there is a statistically significant influence at the significance level ( 0.05) for entrepreneurship, reflected by its aspects (innovation, creativity, proactivity, and risk tolerance), on the overall quality of Jordan's public universities."

All predicted and tested (T) values for (B) in the four models had p-values less than 0.05, ranging from (0.000 to 0.018). They demonstrated the significance of coefficients at the 0.05 level of significance.

In light of the above, we reject the first primary null hypothesis and accept the alternative hypothesis, which says that entrepreneurship, as shown by its dimensions (innovation, creativity, proactivity, and risk tolerance), has a statistically significant effect on the quality of its dimensions across all public universities in Jordan at the 0.05 level of significance. Second: Testing sub-hypotheses

Ho1.1 First, the null hypothesis is that there is no statistically significant impact at the significance level ( 0.05) for innovation in overall quality in all of its aspects at Jordan's public universities.

This hypothesis was examined using the Simple Regression test.

It is evident that the correlation coefficient (R) between innovation and overall quality was (0.282) and that there was a direct link between the two variables. This illustrates how the innovation dimension influences the dependent variable "total quality" in a favorable manner Ratio of determination ( $R^2$ ) value: (0.080). While the

calculated value of (F) was (28,784) and the analytical relevance threshold was (0.000), 8% of the variance in entrepreneurship and overall quality may be attributed to this factor ( 0.05). The significance of the recurrence is therefore confirmed.

So, we may conclude that the alternative hypothesis is correct and dismiss the null. This suggests that innovation has a statistically significant impact on the efficiency of Jordan's public universities at the 0.05 level of significance.

Ho1.2 Second sub-hypothesis: There is no statistically significant influence at the significance level ( 0.05) for creativity in overall quality across all of its aspects at Jordan's public universities.

Using the Simple Regression test, it was determined that the correlation coefficient (R) between originality and overall quality was 0.176, indicating that the link between the two variables was direct. This explains why the attribute of creativity has a positive influence on the dependent variable "overall quality." The value of the coefficient of determination (R<sup>2</sup>) was (0.031), which corresponds to a variation in entrepreneurship and overall quality of (3.1%). ((F) was determined to be (10.635).) having a statistical significance level (0.000) that is below ( 0.05). This substantiates the importance of the regression.

As a result, it was determined that there is a statistically significant difference between the two hypotheses for creativity in terms of overall quality at Jordanian public universities (i.e., the null hypothesis was rejected and the alternative hypothesis was accepted (0.05).

Ho1.3 Third subhypothesis: There is no statistically significant influence of proactivity on overall quality in Jordanian public universities at the significance level (0.05).

Using the Simple Regression test, it was determined that the correlation coefficient (R) between the two variables (proactivity and overall quality) was (0.289), indicating a direct association between the variables. This illustrates how the proactive component influences the dependent variable "overall quality" in a favorable manner. The value of the coefficient of correlation (R<sup>2</sup>) was 0.083, or 8.3% of the improvement in entrepreneurship and overall quality, although the computed (F) value was 30.332, with a level of statistical significance (0.000) less than ( 0.05). This substantiates the importance of the regression.

Based on what was already known, the alternative hypothesis was chosen over the null hypothesis. Furthermore, there is a statistically significant influence at the 0.05 significance level for proactivity in Jordan's public universities' overall quality.

Ho1.4 For our fourth null hypothesis, we assume that at the.05 level of statistical significance (0.05), the relationship between risk aversion and the overall quality of education provided by Jordan's public institutions does not hold true.

This theory was tested using the Simple Regression technique.

A R value of 0.290 shows that there is a direct link between risk tolerance and total quality. To put it another way, this is why the "overall quality" dependent variable benefits from the risk tolerance characteristic. The estimated (F) value was 30.666, with a statistical significance level of 0.000, which is less than 0.05, and the coefficient of determination (R<sup>2</sup>) value was 0.084, representing 8.4% of the change in entrepreneurialism and overall quality (0.05). Hence, the importance of the regression is confirmed.

Results indicated that the alternative hypothesis was correct, whereas the null hypothesis was incorrect. Furthermore, at the.05 level of statistical significance or higher (0.05), risk aversion has a significant impact on the quality of Jordan's public universities.

## Findings and recommendations

### First: Results

The study found the following:

1. Public university administrations support research and development processes to encourage innovation, involve employees in solving problems they encounter at work, Moreover, they work to continually motivate those employees to achieve creativity and innovation, and are keen on their participation to achieve innovation in operations.
2. Public universities take proactive measures to solve problems and adapt to the expected circumstances later. They also provide sufficient space to accommodate work tools to facilitate the sequence of activities, and they are keen to complete their activities on time.
3. The administrations of public universities provide standards for total quality, and are interested in diagnosing and analyzing problems. Furthermore, they work to simplify the concept of total quality for the employees working at all levels, and monitor the quality of their outputs, as they have awareness of the necessity of applying total quality systems.
4. Public universities administrations work on reviewing policies and procedures on a permanent basis to ensure continuous improvement, and support the ideas related to protecting their outputs from risks with the aim of continuous improvement. They also monitor (data and information) on an ongoing basis, and take suggestions from the relevant authorities to improve their outputs.

5. Public universities allow a break from the routine in order to improve student service, conduct various surveys to determine the level of student satisfaction, encourage workers to work together, and organize periodic meetings with the aim of strengthening the relationship with students, while being keen to quickly respond to students' demands.

### Second: Recommendations

The study recommended the following:

1. Work to invest new innovative ideas and solutions and transform them into useful and usable services and processes, and to increase concern for continuous improvement of its services and operations.
2. Working to provide a suitable environment (working environment) for the creation of methods and ideas.
3. Work to increase the interest in sending some employees to external courses to develop their creative skills.
4. Work to improve the forecasting process for potential environmental variables and future market demands ahead of its competitors, and enhance forecasting processes for future demands ahead of its competitors.
5. Continuously work to improve the quality of the outputs to be able to compete, and develop their operations based on the feedback from the relevant authorities with the aim of continuous improvement.
6. Work to encouraging employees to express their opinions.
7. Work to monitor the supply of raw materials necessary for the university's work on time, and reduce the differences or conflicts that occur between the administrative levels at the university with regard to TQM.

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