

## IMPACT OF TOTAL QUALITY MANAGEMENT PRACTICES ON THE TRANSFORMATION TO ENTREPRENEURIAL UNIVERSITIES IN PALESTINE: THE MODERATING ROLE OF INNOVATION

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**Abstract:** *The increasing demand for a knowledge-based economy and the widespread influence of globalization have led to a significant transformation in higher education. This transformation has resulted in a departure from conventional paradigms and a shift towards the entrepreneurial university (EU) framework. The objective of this study is to examine the effects of adopting total quality management (TQM) principles on the process of transitioning traditional Palestinian universities into entrepreneurial universities (EUs). Furthermore, this research investigates the potential role of innovation as a moderating variable in facilitating the transformation process by means of adopting Total Quality Management (TQM) practices. In order to accomplish these aims, a thorough research model was established, utilizing a survey methodology for the purpose of data collecting. The research sample comprised senior management professionals from 18 Palestinian universities. A total of 44 questionnaires were collected from a subset of 12 selected institutions. The data analysis involved the utilization of the partial least squares structural*

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*equation modelling (PLS-SEM) method, which was implemented using Smart-PLS software. The findings indicate a noteworthy integration of Total Quality Management (TQM) strategies and innovation in Palestinian universities, accompanied by a moderate level of implementation in entrepreneurial activities. Moreover, the research findings suggest that the adoption of Total Quality Management (TQM) practises significantly and positively influences the shift towards Environmental Upgrades (EUs). Nevertheless, it is important to highlight that the presence of innovation does not exhibit a moderating influence on this particular association. This research contributes to the existing body of knowledge by demonstrating connections between three variables, offering empirical support for the integration of Total Quality Management (TQM) practises, innovation, and entrepreneurship in the Palestinian higher education setting. The results underscore the imperative for decision-makers inside Palestinian institutions to embrace effective Total Quality Management (TQM) practises, placing particular focus on information and analysis, as well as people management. The primary objective of this concentration is to foster entrepreneurial endeavours within the realm of higher education.*

**Keywords:** Total Quality Management, Innovation, Entrepreneurial Universities (EUs), Higher Education Institutions.

## 1. Introduction

In recent years, the significance of higher education has heightened, particularly in its role within areas where the quality of higher education provision plays a pivotal role in shaping a nation's economic status, influencing both poverty and wealth levels (Beerkens, 2020; Chankseliani & McCowan, 2021). Therefore, educational incubators and universities emerge as principal entities, playing a pivotal role in the dissemination and generation of knowledge (Naderibeni, Salamzadeh, & Radović, 2020). Since the 1980s, a growing number of Higher Education Institutions (HEIs) have given rise to what is termed the entrepreneurial university (EU), wherein these institutions identify economic and social development as integral components of their mission (Etzkowitz, 2020). The concept of the entrepreneurial university, a pivotal element in the Triple Helix Model formulated by Etzkowitz, elucidates the evolving role of the university in this context (Rådberg & Löfsten, 2023). TQM enriches the entrepreneurial university by cultivating a culture of ongoing improvement and refining administrative processes to address the dynamic requirements of both students and industry. Consequently, Higher Education Institutions (HEIs) are urged to enhance their efficiency and alleviate financial constraints by implementing TQM, thereby resolving funding issues and other constraints (Pacana & Ulewicz, 2020). Hence, TQM practices emerge as a vital construct across various managerial domains, essential for their successful implementation to attain optimal performance outcomes (Rehmani et al., 2020). Several indispensable critical success factors, such as innovation, are imperative for the effective implementation of TQM; these factors are commonly denoted as TQM practices (Ahinful et al., 2023).

In contemporary times, HEIs confront diverse challenges, encompassing fluctuating stakeholder needs, system expansion, adaptation to emerging technologies, and the exploration of novel avenues for fundraising. Consequently, HEIs are compelled to prioritize both quality and innovation. Quality implementation aids universities in adjusting to environmental shifts, while innovation facilitates the provision of enhanced services to stakeholders (Ozsen, Uslu, & Aypay, 2022). Hence,

achieving a viable competitive edge necessitates more than delivering high quality; it entails cultivating innovative performance (Tseng, Huang, & Chen, 2020). Innovation is characterized as the generation of value derived from ideas. Consequently, innovation is fundamentally linked to the processes of learning and change, often characterized by disruption, substantial costs, and inherent risks. Universities, as institutions, are at the forefront of advancing knowledge on how to foster creative and innovative change. They do so by establishing environments conducive to creativity, innovation, and entrepreneurship (Corso, 2020).

Innovation emerges as a pivotal factor in enhancing TQM, thereby contributing to the improvement of the EU. Nevertheless, this study identifies certain gaps. Primarily, existing literature predominantly explores other countries and sectors, with limited attention devoted to the Palestinian context. Furthermore, prior research has predominantly focused on the impact of TQM on performance, neglecting the examination of its effects on the EU. Additionally, while the direct impact of innovation on performance has been examined, there is limited consideration of the moderating role of innovation in the relationship between TQM and EU, particularly in the Palestinian context. Therefore, this study uniquely concentrates on the Palestinian context, recognizing the undeniable contribution of the higher education system to the well-being of Palestinians and the country's welfare, despite its relatively recent history. Despite aspirations to enhance quality, relevance, capacity, and accessibility for a knowledge-based economy, the Palestinian higher education sector in the West Bank and Gaza Strip faces challenges in effectively promoting development (Abusamra, 2023). Given the identified gaps in existing literature and the importance of Palestinian HEIs, this study aims to investigate the moderating impact of innovation on the relationship between TQM practices and the EU status of HEIs in Palestinian universities.

This study addresses a knowledge gap by investigating the interplay between TQM, innovation, and entrepreneurial practices within Palestinian higher education. Employing a structured methodology and rigorous data analysis, the research holds significance in identifying pivotal TQM practices and entrepreneurial innovations aimed at enhancing entrepreneurial practices and addressing challenges encountered by Palestinian universities. The findings of this study are expected to offer valuable insights to academic and managerial stakeholders, aiding in the pursuit of strategic objectives through the establishment of a comprehensive conceptual framework for the development of professional and resource-efficient entrepreneurial universities. Moreover, the study has the potential to facilitate the transition from traditional to entrepreneurial institutions by advocating for the effective implementation of TQM practices and various educational innovations. The ensuing sections of the research encompass a literature review, research methodology, data analysis and results, and a comprehensive discussion and conclusion.

## 2. Literature Review

### 2.1 Total Quality Management

Mukhopadhyay (2020a, 2020b) suggest that TQM is an ongoing process wherein management undertakes essential actions to empower all organizational employees to attain and surpass specific standards aligning with the needs and expectations of both

internal and external customers. TQM is commonly characterized as a collective endeavour across organizational departments to foster an environment conducive to continuous improvement, enhancing the capability to consistently deliver high-quality products and services (Kulenović, Folta, & Veselinović, 2021). TQM has demonstrated its efficacy in the education sector as a mechanism for ensuring the quality of guidance in academic reform. It represents the latest array of programs, models, recipes, and slogans employed for such guidance. Rooted in the premise that everyone within an institution assumes the role of a manager for their respective duties and responsibilities, this management style necessitates a protracted planning period (Thapa, 2022). Consequently, the rigorous application of TQM to a professional extent holds the potential to substantially rejuvenate higher education systems (Ponomarenko et al., 2022). Past literature on TQM delineates it as a multifaceted management tool encompassing practices like continuous improvement, employee involvement, top management commitment, empowerment, teamwork, leadership support, benchmarking, rewards, feedback, and supplier relationship management (Kuncoro, 2021).

Earlier literature has also examined TQM through various practices, including the initial one, namely, top management support (TMS), which pertains to long-term managerial support and the philosophy of quality management. Manatos and Sarrico (2023) highlighted the significance of a university's mission, emphasizing the promotion of its culture, staff involvement in quality management activities, and the pivotal role of management support in ensuring alignment with values and goals. The second practice, student focus (SF), revolves around recognizing and fulfilling the needs and expectations of Higher Education Institution (HEI) students to attain customer satisfaction. A successful TQM program is underpinned by a thorough understanding and response to students' needs and complaints, necessitating a close and responsive relationship with them (Manatos & Sarrico, 2023). The third practice, people management (PEM), encompasses diverse activities, including the selection and training of employees, as well as the establishment of systems for both rewards and effective communication (Periañez-Cristobal et al., 2021). Individuals within HEIs, encompassing faculty members and other staff, constitute the fundamental fabric of these institutions and serve as the cornerstone for the delivery of value. Hence, PeM holds paramount relevance within HEIs (Sciarelli, Gheith, & Tani, 2020b). The fourth practice, strategic planning (SP), involves elucidating the mission and vision, defining strategic objectives, and aligning an action plan for the attainment of goals and meeting stakeholders' demands (Asnawan, 2021). The fifth practice, process management (PRM), encompasses the oversight of administrative, research, and educational processes within HEIs. In essence, process management in HEIs entails the governance and enhancement of administrative, research, and teaching methodologies (Periañez-Cristobal et al., 2021). Sixth dimension is, information and analysis (IA), Kulenović et al. (2021) stated that the procedures employed for systematically collecting data to regularly assess quality and evaluate employees are collectively known as IA. Emphasizing the scrutiny of quality data, including errors and non-conformities, serves as a catalyst for designing improved products and services that align more closely with customer needs. Furthermore, it contributes to the enhancement of supply chain relationships and processes (Kim & Fortado, 2021). The seventh dimension, program design (PD), entails routine and periodic evaluations of academic programs, ensuring their updates while considering the diverse needs of stakeholders de Nadea, Carvalho, and Vieira (2021). This study is grounded in the

aforementioned seven practices.

## 2.2 Innovation

Innovation, denoting the introduction of novel ideas or processes, is characterized by the incorporation of new elements into an existing performance (Hatamlah et al., 2023; Thuneibat et al., 2022). From an institutional perspective, innovation is described as the optimal or successful application of new ideas (Texeira-Quiros et al., 2022). In the realm of higher education, there are two types of innovation. One of these, known as administrative innovation (Ad\_In), involves a top-down approach where high-level managers are responsible for executing the associated activities (Texeira-Quiros et al., 2022). The other type is technical innovation (Te\_In), contrasting with the first approach, as it adopts a bottom-up perspective, leveraging the commitment of low-level staff engaged in the activities (Tarí & García-Fernández, 2020). More precisely, innovation involves the incorporation of novel elements into the operational system or the implementation of fresh ideas pertaining to services, products, or processes. Conversely, administrative innovation denotes a novel approach within the management system that instigates alterations in the organization's strategy, market orientation, management practices, organizational structure, or administrative procedures (Sciarelli, Gheith, & Tani, 2020a). Frequently, Ad\_In is alternatively labelled as administrative or management innovation (Sciarelli et al., 2020b). The essence of administrative innovation involves novel considerations for personnel enrolment, resource allocation, and task organization, encompassing aspects such as authority and rewards. Ad\_In encompasses alterations in organizational structures, modifications in individuals' behaviours, the introduction of new ideologies and innovative frameworks, as well as changes in roles and procedures (Ali & Johl, 2022).

## 2.3 Entrepreneurial Universities

An EU is an institution with the capacity for innovation and opportunity generation, actively endeavouring to bring about a significant transformation in organizational character. Morland, Scott, and Thompson (2021) emphasized that EUs, acting as catalysts for economic development, exhibit a notable enhancement in global performance. However, it is noteworthy that only a select few elite universities worldwide have effectively cultivated entrepreneurial capital. For instance, Bezanilla et al. (2020) conducted study comprehensively examined all aspects associated with the development of EUs. Findings indicated that internal factors were influenced by contextual factors, with a moderate-to-high correlation observed between internal resources and the instituted processes aimed at fostering entrepreneurship within universities. Notably, training and research processes exhibited a robust association with all facets of EUs' development. Tajpour, Kawamorita, and Demiryurek (2020) asserted that the entrepreneurial model is not solely a process but also an outcome. It is perceived to be closely linked with the cultivation of entrepreneurship and skills, representing an enterprising approach in the management of higher education institutions. Among the models deemed accessible for universities aspiring to achieve innovation and excellence across all dimensions and desiring an entrepreneurial ranking is the "EC-OECD" Entrepreneurial University Framework (Badzińska, 2020). This underscores the importance for organizations to prioritize EUs to enhance their competitiveness within the OECD.

## 2.4 TQM Practices and Innovation

Numerous studies have been conducted in the previous literature; however, there are ongoing debates and gaps in previous research specifically pertaining to universities. In a recent investigation conducted by [Sciarelli et al. \(2020b\)](#) the objective was to examine the connections between TQM practices and both administrative (Ad\_In) and technical innovation (Te\_In) within HEIs. The study aimed to construct a model incorporating a multidimensional framework for TQM to explore how administrative innovation influences technical innovation. The results revealed interconnected relationships between TQM practices, indicating a positive impact on innovation. Notably, the study found that TQM practices, particularly in PrM and PeM, exert a more substantial influence on innovation than previously assumed. Furthermore, the findings indicated that administrative innovation precedes and predicts technical innovation. The primary objective of [Sciarelli et al. \(2020a\)](#) investigation was to scrutinize the associations between both soft and hard Total Quality Management (TQM) practices and two variables, namely innovation and organizational performance. The study's conclusions are as follows: (1) a positive relationship exists between soft and hard TQM practices; (2) both soft and hard TQM practices significantly influence innovation; (3) both soft and hard TQM practices positively impact organizational performance; (4) there is a positive association between innovation and organizational performance; and (5) there is a mediating role played by both hard TQM practices and innovation (both administrative and technical) between soft TQM practices and organizational performance. ([Hussain et al., 2023](#)) identified a positive and significant impact of TQM on innovation.

## 2.5 Innovation and Entrepreneurial Universities

The incorporation of entrepreneurship into higher education is increasingly recognized as crucial for success in dynamic environments, fostering innovation. However, ongoing discussions continue regarding the optimal conceptualization and integration of entrepreneurship into learning opportunities within educational institutions ([Novela, Syarief, & Arkeman, 2021a, 2021b](#)). The academic revolution denotes the shift from the conventional teaching and research-focused university to an EU, signifying a mission centred on economic and social development. Innovation transcends the mere creation of new products; it involves cultivating the conditions for innovation by establishing novel configurations among institutional spheres. The invention of fresh social arrangements and interaction channels assumes a level of significance equivalent to the creation of tangible devices, expediting the pace of innovation ([Etzkowitz, Dzisah, & Clouser, 2022](#)).

[Ramadan \(2020\)](#) Moreover, in the context of Palestine, the findings revealed an absence of a clearly defined model for EUs within Palestinian academic institutions, with Al-Quds University emerging as the closest representative in this domain. The researchers conducted a comprehensive characteristics assessment across universities, encompassing the following categories: Leadership and governance; organizational capacity, encompassing personnel and incentives; integration of entrepreneurship in teaching and learning; establishment of pathways for entrepreneurs; and the extent of internationalization within the EU. Another investigation conducted by [Tarifi and Rawah \(2021\)](#) is pertinent to this discourse as it sought to elucidate the correlation between entrepreneurship and innovation through



a qualitative approach. The study involved multiple case studies to juxtapose diverse scenarios, providing insights into the interconnection between entrepreneurship and innovation within the context of Saudi Arabia. The conclusions drawn indicated a positive relationship between entrepreneurship and innovation, signifying their constructive impact on substantial economic transformations (Tarifi & Rawah, 2021). An additional inquiry by Alayoubi, Al Shobaki, and Abu-Naser (2020) focused on discerning the prerequisites and repercussions of implementing strategic entrepreneurship to attain technical innovation (Te\_In). The study solicited input from administrative and academic personnel at Palestine Technical College in the Gaza Strip. Results indicated a positive correlation between the requisites of strategic entrepreneurship—namely, strategic leadership, strategic resource management, pioneering culture, and pioneering thinking—and the achievement of Te\_In. Furthermore, the study revealed a statistically significant impact of applying strategic entrepreneurship, particularly in strategic resource management and fostering a pioneering culture, on the realization of technical innovation.

## 2.6 TQM Practices, Innovation and Entrepreneurial Universities

Drawing from existing literature, the nexus between TQM and EUs is essential for a comprehensive understanding of their incorporation in higher education. The successful implementation of TQM is intricately linked to its assimilation into the fundamental framework of educational institutions and a thorough comprehension of transformational leadership. Significantly, this study identified a positive influence of transformational leadership on the adoption of TQM practices within the investigated academic institutions (Hambali & Idris, 2020). Moreover, the study furnishes empirical evidence supporting the acknowledgment, execution, and perceived efficacy of quality management in teaching and learning within HEIs (Ansmann & Seyfried, 2022). The research integrates institutional isomorphism and institutional entrepreneurship, two novel perspectives within institutionalism, employing both quantitative survey and qualitative interview data. Results suggest that institutional entrepreneurship assumes a central role in the implementation of quality management, whereas isomorphism significantly influences the adoption of quality management in German HEIs (Ansmann & Seyfried, 2022). The study proposes that, although institutional entrepreneurship addresses organizational culture and confronts isomorphic conformity challenges, the presence of isomorphism itself may contribute to a perceived lack of effectiveness in quality management (Ansmann & Seyfried, 2022). Additionally, the study also reveals that organizations characterized by a higher degree of innovation are likely to enhance their TQM, subsequently contributing to the augmentation of their entrepreneurial practices (Alzoubi, In'airat, & Ahmed, 2022). This indicates that innovation serves as a crucial indicator for enhancing entrepreneurial performance and improving TQM.

In response to identified gaps, the study has devised a research framework outlined in Figure 1. The framework comprises three types of variables: total quality management as an independent variable, innovation as a moderating variable, and entrepreneurial practice as a dependent variable, particularly within the context of Palestinian universities.

The study established the following hypotheses for examination in this research:

**H1:** *TQM practices positively affect the entrepreneurial practices in Palestinian*

universities.

**H2:** TQM practices positively affect innovation in Palestinian universities.

**H3:** Innovation positively affects the entrepreneurial practices in the Palestinian universities.

**H4:** Innovation significantly moderates the relationship between TQM practices and entrepreneurial practices in the Palestinian universities.

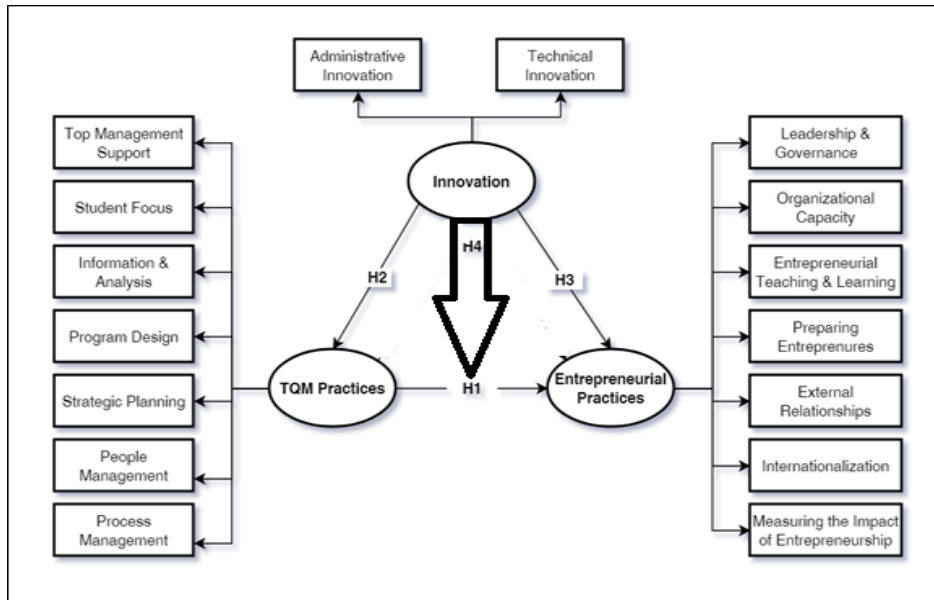


Figure (1): The Conceptual Framework for the Research

### 3. Methodology

This study adheres to the explanatory research type, seeking to scrutinize causal relationships among various variables (Akhtar & Golra, 2021). The focus is on testing the impact of TQM practices and innovation within universities with the aim of transitioning them into EUs. Specifically, the connections between the two independent variables, TQM practices and innovation, and the dependent variable, EU practices, have not been previously explored within the context of Palestinian universities. A quantitative approach was deemed more pertinent for this research type. Additionally, the researchers employed a cross-sectional research design, collecting data at a single point and time.

#### 3.1 Sampling Techniques and Data Collection

Sampling can be conceptualized as the method employed by a researcher to systematically choose a comparatively smaller number of items or individuals, intending to represent a pre-defined population (Mathers, Fox, & Hunn, 2019). The research encompassed all 18 Palestinian universities officially recognized by the Palestinian Ministry of Education and Higher Education, located in the West Bank and Gaza Strip. The target population comprised university presidents, vice presidents, faculty deans, and directors, identified as the most suitable respondents for evaluating the implementation



of TQM practices and entrepreneurship within their respective universities. With three respondents from the management of each university, the total population size reached 54, ensuring comprehensive representation for each institution. The determination of the representative sample size utilized the Steven Thompson equation

$$n = \frac{N \times p(1 - p)}{[(N - 1) \times (d^2 \div z^2)] + p(1 - p)}$$

Where, n= the sample size, N=population size (N=54), P=proportion of property offers and neutral (P=0.5), d=error margin (d=5%) and z= is the upper  $\alpha/2$  of the normal distribution (for 95% confidence level, z=1.95). By substituting the specified parameter values into the aforementioned equation, the sample size is denoted as n=.

Furthermore, the study employed the non-probability convenience sampling method to select the sample, involving the selection of participants from the most accessible segment of the population (Arkin, 1982). The rationale for employing this method lies in considering people as convenient sources for collecting data for research purposes, thus facilitating a straightforward sampling process. Subsequently, the questionnaire was electronically distributed to the selected participants within the university setting. The collected data underwent analysis and interpretation using the PLS-SEM program, aiming to investigate the relationships between the study variables and test the formulated hypotheses.

#### 4. Measurement Development and Questionnaire Design

Following a comprehensive examination of existing literature to address inquiries relevant to the primary variables of the study, a total of 94 items (questions) were formulated to gauge the study's constructs. These questions were categorized as follows: 40 items were devised for the assessment of TQM practices. Specifically, five items were allocated for TMS, seven for SP, eight for PeM, six for SF, six for PrM, four for IA, and four for PD. (Bayraktar et al., 2008; Ahmed and Ali, 2016; Sciarelli et al., 2020a; 2020b). Additionally, an additional set of 11 items was created to assess types of innovation, encompassing five items associated with AI and six items for TI (Sciarelli et al., 2020a; 2020b). Moreover, adhering to the OECD framework for EUs, a set of 43 items was derived to evaluate the entrepreneurial practices of universities. This distribution included five items for leadership and governance (EU\_LG), seven for organizational capacity (EU\_OC), six for entrepreneurial teaching and learning (EU\_TL), seven for preparing entrepreneurs (EU\_Pre), six for external relationships for knowledge exchange (EU\_ExR), six for internationalization (EU\_Int), and six for measuring entrepreneurship (EU\_Meas) (Etzkowitz, 2016). Additionally, the assessment of Innovation practices involved two dimensions, namely Administrative Innovation (Ad\_In) measured by five items and Technical Innovation (Te\_In) measured by another five items. The model adopted a formative reflective structure, with the main latent variables TQM and innovation following the formative model. A Five-Point Likert scale was utilized to gauge the extent to which each practice was implemented at each university, anchored by: (1) very low, (2) low, (3) medium, (4) high, (5) very high.

##### 4.1 Data Analysis and Results

This research employed two types of analyses: firstly, the utilization of the

Statistical Package for Social Sciences (SPSS) for conducting descriptive analysis, and secondly, the application of PLS-SEM to test the research hypotheses.

#### 4.1 Demographic Profile of the Respondents

This section concentrated on the analysis of descriptive information pertaining to the representative sample, comprising 44 respondents out of 48 (yielding a response rate of 91.7%) from 12 distinct Palestinian universities (out of a total of 18 universities). Table (1) provides a summary of the demographic profiles of the respondents.

#### 4.2 Descriptive Statistics

As depicted in Table (2), the mean and standard deviation for each construct were presented, revealing that the overall implementation of TQM practices was high. Specifically, the mean indicated a high level for most practices (such as PD, SP, SF, TMS, and PrM). Conversely, the implementation level of PeM and IA practices was moderate, as their mean fell within the moderate level range.

*Table (1): Summary of Respondents' Profiles.*

Respondents' demographic variables		Frequency	Percentage
<b>Gender</b>	Male	35	80%
	Female	9	20%
<b>Age</b>	Less than 30 years	0	0%
	Between 30-39	8	18%
	Between 40-49	14	32%
	50 years and above	22	50%
<b>Educational level</b>	Bachelor Degree	0	0%
	Master degree	14	32%
	PHD degree	30	68%
<b>Years of experience</b>	Less than 5 years	0	0%
	5-8 years	3	7%
	9-12 years	10	23%
	13 years or more	31	70%
<b>Respondents' positions</b>	Directors	15	34%
	Deans	19	43%
	Vice presidents	10	23%
	University presidents	0	0%

Regarding innovation, the overall implementation level was also high, with the mean of Te\_In approaching the high level, while the implementation level of Ad\_In was at a moderate level. Overall, the implementation of entrepreneurial practices was at a moderate level. Although the following entrepreneurial practices were considered highly implemented, they were slightly below the high level (EU\_LG, EU\_ExER, EU\_Int). The remaining practices were moderately applied (EU\_OC, EU\_TL, EU\_Pre, and EU\_Meas).

#### 4.3 Assessment of the Model

The analysis of the quantitative data obtained from the questionnaire was conducted using the PLS approach through the Smart-PLS software. The PLS analysis comprises a two-step approach, namely the assessment model and the structural model (Sarstedt, Ringle, & Hair, 2021).

*Table (2): Descriptive Statistics for Constructs' Implementation Levels*

Item	Mean	Std. Deviation	Implementation level
TMS	3.8818	.61654	High
SP	4.1818	.58242	High
PeM	3.3722	.55868	Moderate
SF	4.0909	.41368	High
PrM	3.9242	.48419	High
IA	3.4716	.56603	Moderate
PD	4.1989	.49291	High
Total TQM_ Practices	3.8745	.48163	High
Ad_In	3.4773	.39583	Moderate
Te_In	3.6818	.42044	High
Total Innovation	3.5795	.36543	High
EU_LG	3.7636	.67963	High
EU_OC	3.3766	.49687	Moderate
EU_TL	3.2197	.61922	Moderate
EU_Pre	3.2825	.65392	Moderate
EU_ExR	3.8598	.65092	High
EU_Int	3.7348	.60608	High
EU_Meas	3.2008	.71671	Moderate
Total Entrepreneurial Practices	3.4911	.51389	Moderate

#### 4.3.1 Assessment of Measurement Models (Outer Model)

The assessment of the measurement model was conducted in two phases (Ab Hamid, Sami, & Sidek, 2017). The first phase involved examining convergent validity, which refers to evaluating the correlation level among multiple indicators that align within the same construct. The construct should not correlate either with related variables or with dissimilar, unrelated ones (Hair Jr et al., 2021). Therefore, three successive methods are employed to establish convergent validity within a reflective measurement model. Firstly, factor loadings indicate the proportion of item variance demonstrated by the latent construct (variable). A common rule of thumb is that outer loadings should exceed 0.50 to be deemed a reliable item, and those below this threshold should be considered for deletion (Hair Jr et al., 2021). Secondly, the Composite Reliability (CR) serves as an internal consistency measure that evaluates reliability based on the interrelationship of the identified items or variables. Typically, in exploratory research, Composite Reliability/Cronbach's alpha values are deemed acceptable within the range of 0.60 to 0.70. However, in more advanced stages, values should surpass 0.70 (Hair Jr et al., 2021). Thirdly, Average Variance Extracted (AVE) serves as an indicator of sufficient construct validity, and thus, it should exceed 0.50. This implies that the construct explains more than half of its indicator's variance. Items with low loadings, as predicted in Table 3, were subsequently removed. Table 4 presents values indicating that all construct factors, including loadings, CR, and AVE, surpass the recommended threshold values.

*Table (3): Deleted Items (Factor Loading)*

Ad_In4	EU_OC2	EU_OC3	EU_OC7	PeM1	PeM4	PrM3	SF5	Te_In1	IA3
EU_LG4	PeM8	PrM4	SP3	TMS5	PeM5	EU_Pre1	EU_Pre3	EU_Pre2	EU_Pre6

*Table (4): Results of Measurements Model (Convergent Validity)*

Constructs	Items	Item Loading	Composite Reliability (CR)	Average Variance Extracted (AVE)
TMS	TMS1	0.845	0.898	0.689
	TMS2	0.851		
	TMS3	0.795		
	TMS4	0.828		
SP	SP1	0.848	0.914	0.64
	SP2	0.622		
	SP4	0.85		
	SP5	0.835		
	SP6	0.799		
	SP7	0.822		
	PeM2	0.706		
PeM	PeM3	0.759	0.833	0.555
	PeM6	0.723		
	PeM7	0.79		
SF	SF1	0.796	0.838	0.511
	SF2	0.756		
	SF3	0.702		
	SF4	0.723		
PrM	SF6	0.58	0.875	0.637
	PrM1	0.795		
	PrM2	0.712		
	PrM5	0.847		
	PrM6	0.832		
	IA1	0.9		
IA	IA2	0.889	0.88	0.711
	IA4	0.729		
	PD1	0.685		
PD	PD2	0.788	0.846	0.582
	PD3	0.661		
	PD4	0.894		
	Ad_In1	0.743		
Ad_In	Ad_In2	0.623	0.817	0.529
	Ad_In3	0.784		
	Ad_In5	0.749		
	Te_In2	0.717		
Te_In	Te_In3	0.729	0.846	0.525
	Te_In4	0.668		
	Te_In5	0.72		
	Te_In6	0.784		
	EU_LG1	0.907		
	EU_LG2	0.917		
EU_LG	EU_LG3	0.826	0.932	0.775
	EU_LG5	0.867		
	EU_OC1	0.685		
EU_OC	EU_OC4	0.763	0.831	0.553
	EU_OC5	0.811		
	EU_OC6	0.709		
	EU_TL1	0.791		
EU_TL	EU_TL2	0.792	0.903	0.609
	EU_TL3	0.782		
	EU_TL4	0.782		
	EU_TL5	0.746		
	EU_TL6	0.79		
	EU_Pre4	0.869		
EU_Pre	EU_Pre5	0.649	0.822	0.61
	EU_Pre7	0.808		
	EU_ExR1	0.751		
EU_ExR	EU_ExR2	0.859	0.921	0.66
	EU_ExR3	0.787		
	EU_ExR4	0.84		
	EU_ExR5	0.747		
	EU_ExR6	0.882		
	EU_Int1	0.763		
EU_Int	EU_Int2	0.615	0.88	0.552
	EU_Int3	0.767		
	EU_Int4	0.704		
	EU_Int5	0.689		
	EU_Int6	0.892		
	EU_Meas1	0.846		
EU_Meas	EU_Meas2	0.804	0.938	0.715
	EU_Meas3	0.813		
	EU_Meas4	0.858		
	EU_Meas5	0.899		
	EU_Meas6	0.85		

The second examination pertained to assessing discriminant validity, which refers to the degree of discrimination among constructs (Hair et al., 2017). However, Hair Jr et al. (2021) also specified three criteria required to assess discriminant validity. The first criterion is cross-loading; to assess validity, the correlation or cross-loadings of specific construct indicators should exceed all other loadings (Hair Jr, Howard, & Nitzl, 2020). The second criterion involves variable correlation using Fornell-Larcker, indicating that all diagonal values should be greater than the corresponding below values (Ab Hamid et al., 2017). Subsequently, this has been verified for the model employing constructs, as shown in Table 5. Finally, the third criterion is the Heterotrait-Monotrait ratio of correlations (HTMT), which is a novel methodology for assessing discriminant validity in variance-based SEM. Values less than one indicate satisfactory reliability (Henseler, Ringle, & Sarstedt, 2015). The discriminant validity of the model is deemed satisfactory, as evidenced by Table 6, which indicates that the estimated values of Heterotrait-Monotrait ratios (HTMTs) for all constructs were less than one.

Table (5): Fornell-Larcker Criterion (Discriminant Validity)

	Ad_In	EU_ExR	EU_Int	EU_LG	EU_Meas	EU_OC	EU_Pre	EU_TL	IA	PD	PeM	PrM	SF	SP	TMS	Te_In
Ad_In	0.727															
EU_ExR	0.436	0.813														
EU_Int	0.465	0.63	0.743													
EU_LG	0.275	0.793	0.622	0.88												
EU_Meas	0.078	0.508	0.536	0.631	0.846											
EU_OC	0.363	0.63	0.632	0.724	0.593	0.744										
EU_Pre	0.276	0.528	0.551	0.574	0.369	0.448	0.781									
EU_TL	0.272	0.588	0.626	0.617	0.532	0.52	0.74	0.781								
IA	0.333	0.471	0.366	0.537	0.673	0.622	0.153	0.238	0.843							
PD	0.356	0.651	0.239	0.479	0.223	0.314	0.224	0.21	0.41	0.763						
PeM	0.441	0.699	0.526	0.74	0.621	0.698	0.522	0.596	0.661	0.492	0.745					
PrM	0.224	0.491	0.285	0.688	0.504	0.536	0.311	0.253	0.66	0.557	0.674	0.798				
SF	0.249	0.545	0.301	0.47	0.262	0.304	0.32	0.216	0.28	0.642	0.445	0.606	0.715			
SP	0.409	0.633	0.47	0.725	0.441	0.498	0.347	0.28	0.535	0.572	0.698	0.627	0.607	0.8		
TMS	0.483	0.597	0.495	0.612	0.324	0.591	0.412	0.241	0.513	0.545	0.638	0.693	0.642	0.731	0.83	
Te_In	0.693	0.426	0.472	0.44	0.347	0.447	0.433	0.4	0.436	0.368	0.549	0.445	0.419	0.546	0.479	0.724

Table (6): Heterotrait-Monotrait Ratio (HTMT) (Discriminant Validity)

	Ad_In	EU_ExR	EU_Int	EU_LG	EU_Meas	EU_OC	EU_Pre	EU_TL	IA	PD	PeM	PrM	SF	SP	TMS	Te_In
Ad_In	0.548															
EU_ExR	0.632	0.706														
EU_Int	0.356	0.825	0.692													
EU_LG	0.172	0.528	0.585	0.685												
EU_Meas	0.507	0.745	0.806	0.883	0.733											
EU_OC	0.396	0.647	0.664	0.66	0.446	0.553										
EU_Pre	0.353	0.636	0.678	0.651	0.551	0.606	0.716									
EU_TL	0.452	0.53	0.449	0.619	0.763	0.822	0.286	0.276								
IA	0.556	0.783	0.352	0.55	0.268	0.442	0.375	0.296	0.519							
PD	0.595	0.85	0.681	0.914	0.747	0.736	0.696	0.72	0.835	0.632						
PeM	0.355	0.56	0.331	0.807	0.566	0.687	0.364	0.302	0.803	0.701	0.835					
PrM	0.398	0.652	0.419	0.564	0.326	0.435	0.434	0.268	0.363	0.824	0.578	0.766				
SF	0.523	0.68	0.563	0.805	0.468	0.612	0.408	0.302	0.624	0.664	0.845	0.719	0.706			
SP	0.632	0.662	0.604	0.689	0.344	0.749	0.495	0.264	0.619	0.662	0.779	0.811	0.766	0.812		
TMS	0.801	0.511	0.606	0.522	0.422	0.639	0.583	0.472	0.565	0.477	0.724	0.564	0.57	0.668	0.582	
Te_In																

After checking the above-mentioned tests, it can be concluded that the discriminant validity of model was established. Figure (2) shows the overall measurement model of the study.

#### 4.4 Assessment of the Structural Model

Upon confirming the reliability and validity of the measurement model, the

structural model results were examined to assess the relationships among constructs and the model's predictive capabilities. Four criteria were employed for this assessment. The coefficient of determination ( $R^2$  Value) measures the model's explanatory power and the variance explained by the endogenous constructs.

The  $R^2$  can range from 0 to 1, with values below 0.25 considered weak for the dependent variables, values from 0.25 to 0.5 considered moderate, and values from 0.50 to 0.75 considered substantial (Hair et al., 2019). Additionally, the effect size ( $f^2$ ), which measures the change in the  $R^2$  value when a specified exogenous construct is omitted from the model, can be utilized to assess whether the omitted construct has a substantive impact on the endogenous constructs. Guidelines for interpreting  $F^2$  values are as follows: if the value is less than 0.02, it indicates no effect size; between 0.02 and 0.15, it suggests a small effect size; between 0.15 and 0.35, it indicates a medium-sized effect; and values above 0.35 are considered to have a large effect size (Ringle et al., 2023). The blindfolding procedure is employed to estimate the Stone-Geisser's ( $Q^2$ ) value, a measure indicating the out-of-sample predictive relevance of the model. In the structural model,  $Q^2$  values greater than zero for a particular reflective endogenous latent variable indicate the path model's predictive relevance for that specific dependent construct (Ringle et al., 2023). Table (7) presents a summary of the results for these tests. It is evident that the values of  $Q^2$  for all endogenous latent variables are greater than zero, indicating the model's adequate predictive quality. The goodness-of-fit model (GoF) assesses the reliability of the developed model. For both the measurement and structural models, the calculated GoF value for the study's model was 0.621, signifying sufficient global PLS model validity.

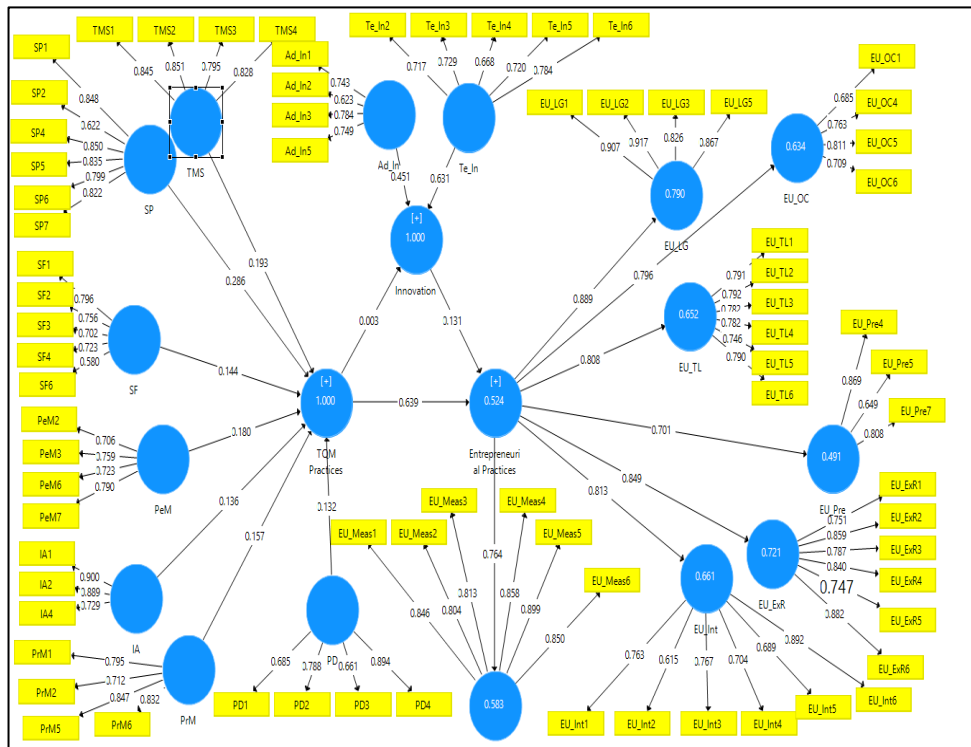


Figure (2): Assessment of the study's measurement



Impact of Total Quality Management Practices on the Transformation to Entrepreneurial Universities in Palestine: The Moderating Role of Innovation

Table (7): R2, Communality, and Redundancy.

Construct	R2	R2-Adjusted	Result	Q2	f2 Innovation	f2 TQM Practices
<b>Entrepreneurial Practices</b>	0.59	0.57	High	0.191	0.024	0.567
EU_LG	0.79	0.784	High	0.597	No effect	Large effect
EU_OC	0.634	0.625	High	0.307		
EU_TL	0.652	0.644	High	0.345		
EU_Pre	0.491	0.479	Moderate	0.257		
EU_ExR	0.721	0.715	High	0.381		
EU_Int	0.661	0.653	High	0.322		
EU_Meas	0.583	0.573	High	0.387		
<b>Innovation</b>	-	-	-	0.419		
<b>TQM Practices</b>	-	-	-	0.36		

The structural model was estimated to examine the relationships within the study model using the PLS-SEM algorithm. The results of the structural model indicated a significant positive effect of TQM practices on EU practices, with a P-value less than 0.05, supporting the proposed hypothesis (H1) ( $\beta=0.639$ , T-Value=3.412, P-value=0.001). However, a slightly positive yet insignificant relationship was observed between TQM practices and innovation, with a P-value higher than 0.05 ( $\beta=0.003$ , T-Value=0.475, P-value=0.635), indicating that H2 is not supported. Additionally, a slightly positive yet insignificant relationship between innovation and entrepreneurial practices was found, as the P-value exceeded 0.05 ( $\beta=0.131$ , T-Value=1.092, P-value=0.276), indicating that H3 is not supported.

Table (8): Path Coefficient of the Research Hypotheses

Path	HY P.	Standard Beta ( $\beta$ )	Standard Deviation (STDEV)	T-value	P-value	Result
<b>TQM Practices → Entrepreneurial Practices</b>	H1	0.639	0.187	3.412	0.001	Supported
<b>TQM Practices → Innovation</b>	H2	0.003	0.007	0.475	0.635	Not Supported
<b>Innovation → Entrepreneurial Practices</b>	H3	0.131	0.12	1.092	0.276	Not Supported

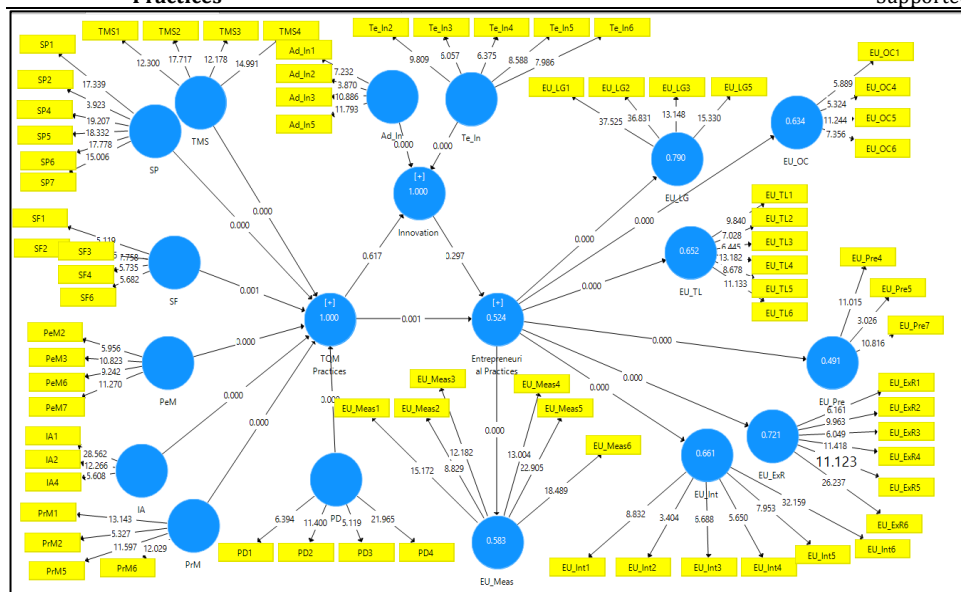


Figure (3): Model Fit employing PLS (Bootstrapping Procedure)

#### 4.5 Moderation Analysis

A moderator is a variable that influences the direction and/or strength of the relationship between independent and dependent variables. For a variable to be considered a moderator, it must meet two conditions: (1) It should have a significant moderating effect, and (2) the moderator should contribute to either diminishing or enhancing the effect (Baron & Kenny, 1986). Table (9) suggests that the impact of the moderator variable (innovation) on EUs' practices is not statistically significant. Thus, the first condition for moderation is not met. Consequently, the findings indicate that the presence of innovation does not significantly alter the strength of the relationship between TQM practices and entrepreneurial universities, as presented in Table 9 and Figure 3.

Table (9): Moderation Test

Path	HYP.	Standard Beta ( $\beta$ )	Standard Deviation (STDEV)	T-value	P-value	Result
Moderating Effect 1 → Entrepreneurial Practices	H4	-0.208	0.139	1.63	0.104	Not Supported

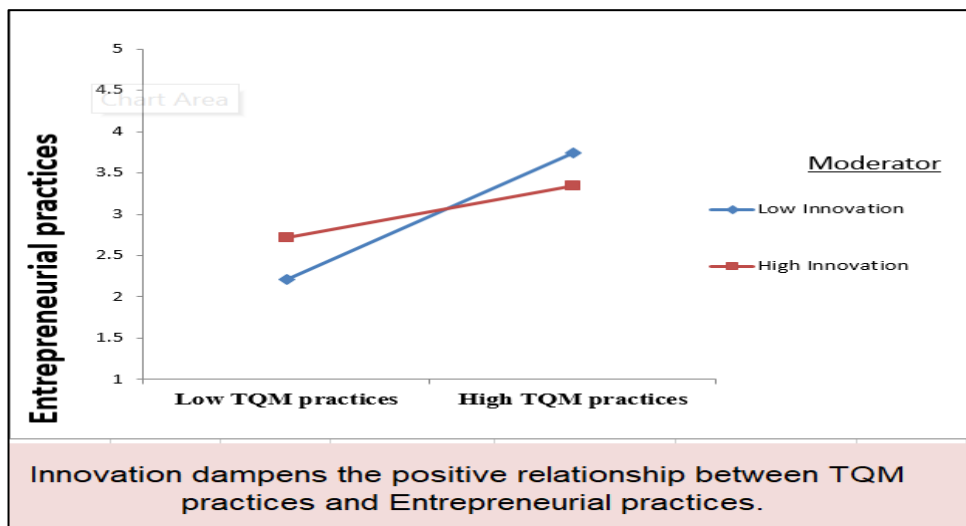


Figure (4): Moderation Effect

#### 5. Discussion of Results

The study aimed to examine the moderating role of innovation in the relationship between TQM practices and EP in Palestinian universities. Data were collected from university presidents, vice presidents, faculty deans, and directors. Three hypotheses were formulated for this objective. The first hypothesis posited that TQM practices have a positive and significant impact on university EP. This assertion is illustrated by the case study of the American University of Belgrade, which emphasizes total quality management, democratic governance principles, advanced facilities like easy internet access, and the implementation of automation for various operational aspects such as the library (Chambers, 1999). Moreover, these results align with the findings of the Sawaeen and Ali (2020) study, which explored the relationship between entrepreneurial leadership and TQM practices in small and medium-sized companies

in Kuwait. The study revealed a close connection between TQM practices and entrepreneurial leadership. Second, the results indicated a positive yet insignificant relationship between TQM practices and innovation. This outcome is realistic due to the complex nature of TQM, encompassing both hard and soft practices, each associated with diverse organizational opinions, whether mechanistic or organic. Additionally, the TQM-innovation relationship is contingent on the organizational type, suggesting that implementing TQM in an organic structure, as opposed to a mechanistic one, would lead to a significant positive TQM-innovation relationship (Liao, Chang, & Wu, 2010). Although this result is inconsistent with the findings of many researchers such as Sciarelli et al. (2020a) and Aminbeidokhti, Jamshidi, and Mohammadi Hoseini (2016), it is consistent with the findings of the Singh and Smith (2004) study, which concluded that there is inadequate statistical indication to propose that TQM is correlated with innovation. Third, the findings also indicated a positive yet insignificant relationship between innovation and entrepreneurship in universities. This outcome can be elucidated by recognizing that innovation and entrepreneurship are distinct concepts. Universities pursue innovation to gain a competitive advantage, while entrepreneurship endeavours to rejuvenate the economy at large, resulting in an insignificant correlation between them. This result aligns with the findings of Tarifi and Rawah (2021), who emphasized the lack of a precise explanation for innovation. Despite numerous studies focusing on entrepreneurship, it cannot be succinctly summarized. Various models exist, highlighting the inconsistent relationship between innovation and entrepreneurship.

However, Zhao (2005) discovered a robust positive relationship between entrepreneurship and innovation, highlighting their complementary nature crucial for the flourishing and sustainability of organizations, particularly in today's dynamic environment. The researcher posits that the lack of consensus among scholars regarding the relationship between innovation and entrepreneurship may stem from the influence of other critical factors, such as management style and organizational culture. Ultimately, the study did not find support for the moderating effect of innovation between TQM practices and entrepreneurial practices, leading to the rejection of H4. Thus, the study concluded that innovation does not act as a moderator variable between TQM practices and entrepreneurship in Palestinian universities

## 6. Theoretical and Practical Implications

The present study significantly contributes to the existing literature by investigating the interrelationships among three key variables—TQM practices, innovation, and entrepreneurship—within the context of higher education in Palestine. Notably, there is a dearth of studies exploring the combined effects of these variables in this specific context. The research underscores a substantial and positive impact of TQM practices on university entrepreneurship. The positive yet insignificant correlation between TQM practices and innovation underscores the nuanced influence of TQM on innovation, contingent upon organizational structures. The observed positive but insignificant link between innovation and entrepreneurship implies a distinct separation of these concepts in the higher education context, emphasizing their intricate relationship. The rejection of the moderation effect of innovation between TQM practices and entrepreneurial practices suggests the involvement of other pivotal factors shaping this dynamic, such as management style and

organizational culture. These findings contribute to advancing our comprehension of the intricate interplay among TQM, innovation, and entrepreneurship within Palestinian universities.

In practical terms, this study has formulated and empirically validated a model to evaluate the influence of TQM on the transition toward an entrepreneurial university within the Palestinian context. Furthermore, it has supplied empirical insights into the extent of implementation of TQM practices, innovation, and entrepreneurial practices in the Palestinian higher education sector. This empirical evidence is invaluable for the top management of universities, offering an assessment of the current status of TQM, innovation, and entrepreneurship levels. Additionally, it aids universities in identifying their existing strengths and weaknesses in these domains. Furthermore, this study delved into how the implementation of TQM practices drives universities toward entrepreneurship. It also examined whether the incorporation of innovation enhances the connection between TQM and entrepreneurship in universities.

## **7. Conclusions and Limitations**

This research sought to investigate the moderating influence of innovation on the association between TQM practices and university EP. The initial hypothesis affirmed a positive and significant influence of TQM practices on university EP. However, the second hypothesis uncovered a positive yet insignificant correlation between TQM practices and innovation, highlighting the intricate nature of TQM as a management philosophy with effects contingent on organizational structure. The third hypothesis suggested a positive yet insignificant correlation between innovation and entrepreneurship in universities, underscoring the differentiation between innovation's pursuit of competitive advantage and entrepreneurship's aim to revitalize the economy. Crucially, the study refuted the fourth hypothesis, indicating that innovation does not function as a moderator between TQM practices and entrepreneurship in Palestinian universities. This research provides valuable insights into the intricate dynamics of TQM, innovation, and entrepreneurship within the higher education context, highlighting the necessity for a nuanced understanding of these relationships and the contextual factors influencing them.

The research entails several implications. Firstly, challenges emerged from the study's sample, predominantly top management in universities, with communication difficulties due to their constrained time and demanding schedules. This sample composition concentrated on university presidents, vice presidents, and department directors directly engaged in quality planning and entrepreneurship, indicating that future research might delve into other sectors. Secondly, challenges in accessing certain Palestinian universities, particularly those in the Gaza Strip, led to only two responses; hence, future research could explore new avenues to expand the research scope. Thirdly, the scarcity of studies simultaneously examining the relationships between TQM, innovation, and entrepreneurship in higher education impeded comparative analysis. The significant diversity in TQM practices among Palestinian universities influenced overall results, presenting opportunities for future researchers to conduct comparative or case studies.

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