The relationship between excellence management systems and innovation performance: An empirical study

Mohammed H. Alanazi*

Department of Administrative Sciences, King Fahd Security College, Riyadh, KSA

*Corresponding author. Email: anazim@kfsc.edu.sa

(Received 21/07/2021)

Keywords: excellence management systems, innovation, Saudi Arabia, EFQM model, quality management, structural equation modeling

Abstract: The purpose of this study is to examine the influence of excellence management systems factors on innovation performance using the Saudi excellence model as a framework. The proposed hypotheses are examined using empirical data collected from Saudi organizations by applying the structural equation modeling technique. The results suggest that strategic planning, operations management, and partnerships and resources have a direct effect on innovation performance, and that leadership is considered an antecedent of it. This study contributes to extant knowledge and can assist managers by confirming excellence management systems as one of the essentials of innovation, and that these systems should be managed inclusively to achieve elevated innovation performance.

1. Introduction

In the current competitive marketplace, innovation is deemed a strategic factor for taking advantage of new opportunities and protecting knowledge assets (Hurmelinna-Laukkanen et al., 2008). However, many organizations that should be innovative are not successful at developing new products or services because they lack the implementation of key innovation drivers. This has encouraged scholars to identify the relevant key drivers in this regard (Becheikh et al., 2006).

Existing research suggests that excellence management systems (i.e., excellence models) can be considered one of the prerequisites of innovation (Para-González et al., 2021). Excellence management systems or excellence models are ideal reference framework for the implementation and improvement of TQM in an organization (Fonseca, 2021). Different factors of excellence management systems can enhance financial and non-financial performance, thereby providing a competitive advantage (Bou-Llusar et al., 2009). Accordingly, approximately 100 different business excellence models (BEMs) have been developed worldwide (Alanazi, 2021; Mohammad et al., 2011). One example of BEMs is the Saudi excellence model (SEM), which aims to promote and instill the principles of quality and organizational excellence in a knowledge-based manner, thereby ensuring alignment with the best world-class practices, presenting suitability to the local culture, and encouraging innovation (KAQA, 2016).

The SEM does not, however, explicitly reflect the relationship between different factors of excellence management systems and innovation performance. Furthermore, despite the value indicated by the factors of excellence management systems (including innovation), the empirical literature on this issue remains limited and indistinct.

Only a small number of studies have focused on analyzing BEMs empirically, with limited clear results on the particular excellence management systems factors that have a greater impact on performance, and those that specifically affect results (Alanazi, 2020). Studies have tended to focus on one single/combined performance factor (e.g., Mai et al., 2018; Peng et al., 2019; Suarez et al., 2016). The compilation of all performance results into a single construct may confound and negate the identification of important causal relationships, considering that the range of business results factors included in BEMs (e.g., the SEM) is conceptually broad and measures many facets of performance (Badri et al., 2006; Meyer & Collier, 2001). Other studies have focused on specific performance factors, such as financial performance (Calvo-Mora et al., 2014), the operational performance of processes (Psomas & Jaca, 2016), social performance (Calvo-Mora et al., 2018), and people performance (Para-González et al., 2018). Other research focused on innovation performance (e.g., Para-González et al., 2021). These studies are scarce and incomplete (Doeleman et al., 2014; Suárez et al., 2017), and their results are mixed (Kim et al., 2012; Para-González et al., 2021; Prajogo & Hong, 2008; Sadikoglu & Zehir, 2010; Singh & Smith, 2004).

A number of the above-noted studies focused on the overall influence effected by the factors of excellence management systems on innovation performance (Kafetzopoulos et al., 2019; Martínez-Costa & Martínez-Lorente, 2008; Para-González et al., 2021; Sadikoglu & Zehir, 2010; Santos-Vijande & Álvarez-González, 2007). Although these studies captured the complete group of factors, they did not examine specific relationships between particular constructs. This is necessary because the relationships between these constructs may reflect where the full power of BEMs are derived from; as such, there is a strong need to examine individual BEM factors within an integrated system (Naylor, 1999; Peng & Prybutok, 2015). Moreover, the overall influence of factors of excellence management systems on innovation performance cannot easily be generalized (Abrunhosa & Sá, 2008).

In this context, Kafetzopoulos et al. (2019) called for future research to analyze the effects of excellence management systems factors on innovation in more depth using a multidimensional view of excellence management systems. Martínez-Costa and Martínez-Lorente (2008) indicated that more studies are needed to investigate the specific excellence management systems factors that have stronger impacts on innovation and whether some of these factors may, in fact, represent a barrier to achieving the success of these systems.

Taking into consideration the above, and with the aim of addressing the noted research gap, the purpose of this study is to determine how individual excellence management systems factors (enablers of the SEM, i.e., leadership, human resources, strategic planning, operations management, and partnerships and resources) affect innovation performance. The objective of this research can be highlighted by posing the following research question: What excellence management systems factors are related to innovation performance?

Answering the above-noted research question represents the contribution of this paper, i.e., improving our understanding of the interrelationships between the factors of excellence management systems and performance, and underscore which of these factors are more significant in terms of enhancing organizational innovation performance. This will assist organizations in identifying areas that should be addressed to establish excellence management systems, which will help to support better innovation performance.

The rest of this paper is organized as follows. Section 2 provides a literature review that supports developing the research hypotheses. Section 3 presents the research methodology, and section 4 presents the results. Finally, section 5 presents a discussion of the results, the research conclusions, and outlines the study limitations.

2. Literature review and research hypotheses

2.1. Excellence management systems

An example of a BEM is the SEM, which was introduced in 2007 in Saudi Arabia as part of an effort to motivate domestic manufacturing and service sector firms to adopt total quality principles, raise quality standards, and keep abreast of global competition. The SEM aims to encourage continuous improvement in these areas and to honor organizations that attain the highest levels of quality (KAQA, 2011).

The SEM includes eight criteria that are associated with two domains, i.e., enablers and results. The enablers domain includes leadership, human resources, strategic planning, operations management, and partnerships and resources, focusing on beneficiary, and effect on the society. Conversely, the results domain comprises business results. These eight criteria are broken down into various sub-criteria, and each sub-criterion is clarified by various "guidance points" that provide requirements/examples of what the organizations have to do to achieve the criteria (KAQA, 2011). The SEM model attempts to present the theory and performance relationships within BEMs. Accordingly, it identifies the constructs that influence the final results achieved by organizations and depicts the interactions between these constructs. Generally, it is constructed based on the European Foundation for Quality Management (EFQM) model.

The enablers (excellence management systems) focus on how the organization operates, while the results focus on the impacts of these operations on a range of organizational stakeholders (Gómez-López et al., 2016). Within the aforementioned enablers of the SEM, the focus of this research is on leadership, human resources, strategic planning, operations management, and partnerships and resources, which are considered among the most common and critical factors of excellence management systems (Hietschold et al., 2014). These factors also represent, e.g., the enablers criteria of the EFQM model.

The enablers factors are key implementation aspects of excellence management systems and include what an organization does, and how it does it (Suarez et al., 2016). In this context, leadership deals with the role that senior management plays in the organization in terms of determining objectives, expectations, and performance criteria. This factor also pays special attention to the way in which senior management communicates with staff, audit, and reviews organizational performance, and inspires a culture of excellence and quality within an organization (KAQA, 2011). Human resources focus on the role that an organization plays in pursuing excellence in terms of its human resources; this includes preparing, implementing, and following up on these systems, as well as the plans and programs of human resources and their ability to develop a suitable work environment for employees. This aspect is also concerned with explaining areas of developing human resources including planning, management, training, continuous education, as well as employees' participation and satisfaction, and providing support to the Saudization process to achieve the full use of employees' abilities, thereby establishing a high-performance environment (KAQA, 2011).

Strategic planning reflects how the organization describes its method for determining its strategic objectives. This includes improving its competitive status and performance, as well as the way in which it transforms its strategic and development objectives into action plans and development projects to increase profitability and productivity or to improve products and services (KAQA, 2011). Operations management deals with the methods that an organization uses to manage and develop its operations to facilitate implementing its strategy and achieve its objectives. It focuses on the organization's efforts of applying systems of

management quality and standards specifications in managing and improving the primary procedures and processes for designing and delivering products and services. Partnerships and resources focus on the way in which an organization manages partnerships and resources to implement its plans and to achieve its objectives and attain distinction in its work relationships. Furthermore, the quality of the exchanged inputs and outputs that enhance parties' abilities to create value-added aspects increase flexibility and the ability to rapidly respond to change and facilitate long-term balanced relationships between partners (KAQA, 2011).

2.2. The Saudi excellence model and innovation

Innovation is defined as the successful implementation of creative ideas within an organization (Yusr et al., 2017). Therefore, goods and services that are new or partially enhanced can be considered as representing product innovation (Para-González et al., 2021).

Similar to other BEMs, in the SEM, innovation is a transversal concept that appears in each model factor, and incorporates many of the values and areas that are included in the context of innovation.

The SEM is an adaptation of the EFQM model. Although few published studies have focused on the SEM, several researchers have addressed the EFQM model. Research on the EFQM model is often conducted because the EFQM model represents a guide to excellence implementation and has been widely adopted in Europe and elsewhere (Bou-Llusar et al., 2009; Lee & Lee, 2013; Mohammad & Mann, 2010; Talwar, 2011; Tan, 2002).

The logic of the SEM is based on the fact that achieving excellent results is directly related to leadership capacity and strategy, as well as its deployment through the remaining enabler criteria that incorporate innovation principles into the model (Calvo-Mora et al., 2015; EFQM, 2013; Kafetzopoulos et al., 2019; KAQA, 2011). For example, Pfeifer et al. (1998) suggest three subject areas of importance for innovation, i.e., focusing on customers, creative staff, and the changes in organizational structure that are embedded in the SEM enablers.

One of the SEM principles is enhancing creativity and harnessing innovation, which is explained by the following statement:

> "The organizational capability to create and innovate is the advantage that makes the difference today between merely competitive organizations and those aspiring to achieve leadership, excellence and world-class levels of performance. Therefore, excellent organizations promote and integrate the concepts and programs of creativity in their various policies, systems, and processes; encourage their human resources and all stakeholders to put forward ideas and suggestions [aimed] at continuous improvement and the acceleration of creating new products and services that meet and exceed the expectations of customers and make them happy; and support research and development activities, leverage the quick advances in modern technology, and harness the gained knowledge and experience of their human resources in order to enhance the organization's sources of creativity and innovation" (KAQA, 2016: 8).

In addition, several researchers consider innovation to be part of BEMs (including the SEM) (Kafetzopoulos et al., 2019; Para-González et al., 2021).

In short, excellence management systems frameworks, such as the SEM, include innovation, which must be developed by organizations. Furthermore, innovation should be transversally present in the different factors (the seven enablers) that comprise the model, which is conceived as an assessment tool for identifying the strengths and areas for improvement linked to excellence. Innovation is also one of the fundamental principles of excellence.

2.3. Innovation performance

Compared to the comprehensive nature of business results performance, enhancing the focus on innovation performance solely is useful in several ways. The fact that the compilation of all performance results into a single construct may confound and negate the identification of important causal relationships, given that business results factors in BEMs (e.g., the SEM) are conceptually broad and measure many different facets of performance (Badri et al., 2006; Meyer & Collier, 2001).

Existing research suggests several classifications of organizational innovation, such as administrative and technical, product and process, and radical and

incremental (Daft, 1978; Dewar & Dutton, 1986; Ettlie et al., 1984). The current research focuses on the typology of product and process innovation, and on product innovation particularly, to analyze correlations with SEM enablers. Product innovation refers to changes that are employed following the provisioning of products or services (Propris, 2002). These changes are necessary for organizational excellence and represent a key driver for future business success (Martínez-Costa & Martínez-Lorente, 2008).

2.4. Hypotheses development

Given the limited studies available on the SEM, research that empirically investigates the interrelationships among excellence management systems and their results (in the context of BEMs and in the broader context of the total quality management [TQM] domain) were reviewed to construct a theoretical foundation from an academic perspective.

Excellence management systems factors are interrelated. Accordingly, relationships exist among these factors. The relationships among excellence management systems factors have either a direct or indirect influence on performance.

Leadership represents a guiding force for excellence management systems factors by establishing a flexible and creative approach to stakeholders (Gómez Gómez et al., 2011; Heras-Saizarbitoria et al., 2012). Leadership commitment creates a sophisticated excellence systems infrastructure that is required for improving other excellence management systems factors (Sila & Ebrahimpour, 2005).

The empirical research indicates that leadership is positively related to other excellence management systems factors, particularly strategic planning, human resources, partnerships and resources, and operations management (Calvo-Mora et al., 2018; Gómez Gómez et al., 2011; Heras-Saizarbitoria et al., 2012; Para-González et al., 2018). Consequently, the following hypotheses are proposed in this study:

H1. Leadership has a positive influence on strategic planning.
H2. Leadership has a positive influence on human resources.
H3. Leadership has a positive influence on partnerships and resources.
H4. Leadership has a positive influence on operations management.

Past empirical studies that investigated the relationship between excellence management systems factors and innovation are limited and reported mixed results (Kim et al., 2012; Para-González et al., 2021; Prajogo & Hong, 2008; Sadikoglu & Zehir, 2010; Singh & Smith, 2004). One possible reason for this is their focus on the overall impact of excellence management systems factors on innovation. Excellence management systems represent a complex management mechanism comprising different factors. Therefore, analyzing the combined impact of excellence management systems factors on innovation is difficult to generalize, and may lead to contrasting results when associated with innovation (Abrunhosa & Sá, 2008).

This study focuses on the impact of the different excellence management systems factors on innovation to provide a deeper understanding of the unclear association between excellence management systems factors and innovation (see Figure 1).

Adopting excellence management systems can help to support innovation. That is, an organization can develop innovation initiatives, identify potential innovation opportunities, and produce innovative products and services by implementing excellence management systems factors such as strategic planning, human resources, partnerships and resources, and operations management (Kim et al., 2012).

Strategic planning factor emphasizes developing, communicating, implementing, and monitoring strategies. This involves creating plans, programs, and objectives, which, in turn, require transformation into innovation plans, projects, operational objectives, and measurable targets for their successful execution (KAQA, 2011). Therefore, the following hypothesis is proposed:

H5-1. Strategic planning has a positive influence on innovation performance.

Human resources management include the development of human resources plans and policies, developing human resources' knowledge and capabilities, enhancing the work environment, empowering human resources, as well as communication and engagement, which will help to support the success of organizational innovation, new-idea generation, and risk-taking with the aim of satisfying customers (Goetsch & Davis, 2006). Therefore, the following hypothesis is proposed:

H5-2. Human resources has a positive influence on innovation performance.

Partnerships and resources factor focuses on planning and managing relationships with partners and building and deploying strategic alliances to support innovation strategies. It also includes managing finances, facilities, and properties including buildings, equipment, vehicles, and natural resources in a way that balances current and future needs. In addition, it comprises planning and managing knowledge and the necessary technology portfolio to ensure integration, alignment, and the optimal investment in these technologies to achieve mutual benefits for the organization and its stakeholders. Consequently, organizations developing and participating in partnerships represent an important factor for all dimensions of innovation (Rampersad et al., 2010). Therefore, the following hypothesis is proposed:

H5-3. Partnerships and resources has a positive influence on innovation performance

Processes management encourages organizations to develop routines that can be used to create a learning base and support for innovative activities (Peng et al., 2008). Therefore, the following hypothesis is proposed:

H5-4. Operations management has a positive influence on innovation performance.

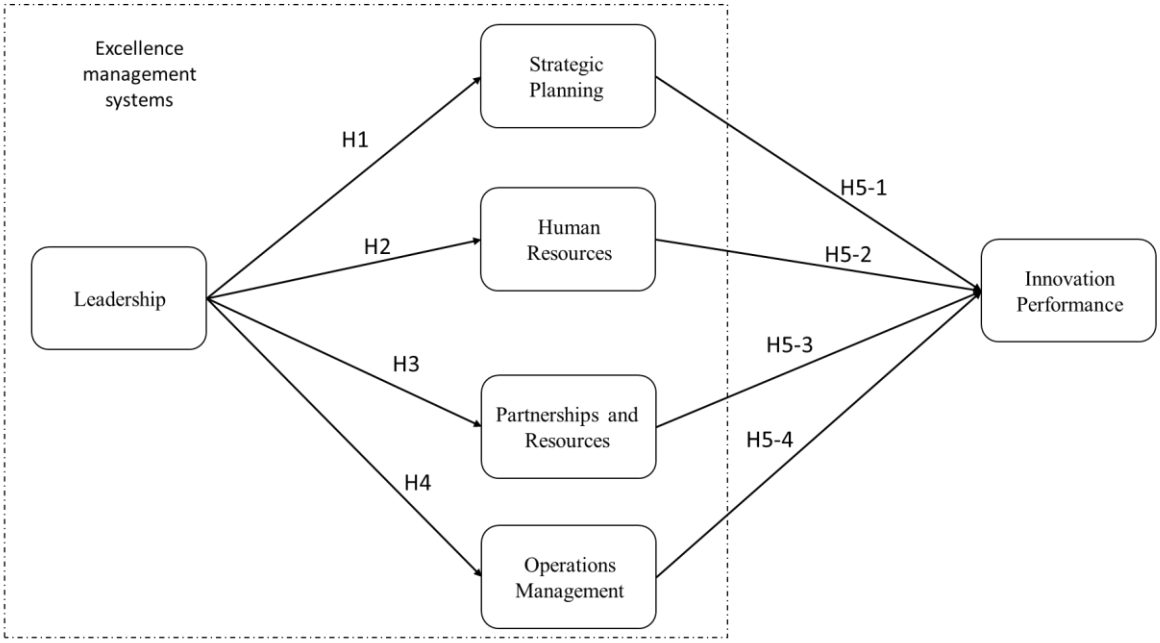

Figure (1) The research model and hypotheses.

***Table* (*1*) Sample characteristics.**

		Frequency	Percentage
Company size	Fewer than 250	63	32
	250 Or more	135	68
	Total	198	100

Sector	Manufacturing	101	51
	Services	97	49
	Total	198	100

3. Methodology

3.1 Sample

Considering the current study's objective, the unit of analysis adopted in the research was the organizational level context. A target sample of companies that claimed to implement TQM programs in Saudi Arabia was selected. The study population database was developed from information collected from the Saudi Ministry of Commerce. To ensure the accuracy and completeness of this list, it was checked by conducting phone calls to the relevant organizations. Given the availability of an accurate and easily accessible sampling frame and the importance of surveying the most knowledgeable informant, the chief executive officer or quality manager was randomly emailed (using simple random sample) a structured questionnaire and was subsequently contacted by telephone to increase the response rate. Eventually, 198 valid questionnaires were obtained (response rate 28.3%) that were fully completed and those that were incomplete were discarded. The study had a margin of error of 5.9% for a confidence level of 95% ($Z = 1.96$; $p = q = 0.5$).

Regarding the profile of the sample (Table 1), 68% of the included organizations were large (250 or more employees) and the remaining 32% were both small and medium-sized firms (fewer than 250 employees, in accordance with the definition of the General Authority for Small and Medium Enterprises, "Monshaat", in Saudi Arabia). The sample comprised 97 services (49%) and 101 manufacturing (51%) organizations.

3.2 Measures

The research measurement model comprised six factors (see Figure 1). Items for excellence management systems factors and innovation performance measures were adapted from existing empirical studies. Some items for excellence management systems factors were developed based on the BEM self-assessment philosophy (Bou-Llusar et al., 2009). Both extant and new scales included in the questionnaire were finalized through several iterations, involving inputs from four academic and four industry experts, pre-testing, and a pilot study to guarantee that the items were interpreted unambiguously. Each measurement item was written as a perceptual statement and paired with a 7-point Likert scale ranging from ''strongly disagree'' to ''strongly agree''. All sources supporting the indicators of these factors are shown in Table A1. Following the recommendations and practices in the literature (Bou-Llusar et al., 2009; Landis et al., 2000; Zhou et al., 2010), prior to testing the measurement and structural models, items were averaged into dimensions for leadership, human resources, strategic planning, operations management, and partnerships and resources, and the different dimensions were treated as separate indicators of their corresponding construct in the structural equation modeling (SEM) analyses.

3.3 Data analysis

The research hypotheses were tested using structural equation modeling (SEM), which was supported by the AMOS 27.0 software program (Arbuckle, 2014). The advantage of the SEM approach is that it integrates factor analysis in its calculations, allowing for incorporating the measurement errors of the multi-indicator constructs in the models. This results in providing more valid parameter estimates. Furthermore, it provides simultaneous tests of the fit of an integrated set of dependence relationships, as opposed to examining coefficients in individual equations (Hair et al., 2010).

Anderson and Gerbing (1988) comprehensive two-stage analytical strategy was followed to test the hypothesized model shown in Figure 1. Using this strategy, the measurement model was assessed during the first stage through confirmatory factor analysis, hence specifying how latent variables were measured in terms of the observed variables. This included evaluating convergent and discriminant validity. In the second stage, the structural model was analyzed, thereby specifying causal relationships and providing an appraisal of nomologic validity (Shah & Goldstein, 2006).

4. Results

4.1 Testing the measurement model

Several analyses were conducted to assure the measurement model's dimensionality, reliability, and validity (Shah & Goldstein, 2006). The analyses results (and their discussion below) indicated that the employed measurement scales were reliable and valid.

***Table* (*2*) The goodness-of-fit for several specifications of the CFA for the measurement model.**

	Goodness-of-fit threshold [a]	Model 1	Model 2
		Measurement model	Single-factor model
χ^2		266.681	4300.071
(d.f.)		155	153
χ^2/df	<3	1.721	2.084
RMSEA	≤0.08	0.060(lo.048;Hi.0.073)	0.084(lo.0.081;Hi.0.087)
SRMR	<0.08	0.045	0.113
CFI	>0.90	0.959	0.803
IFI	>0.90	0.960	0.805

[a] (Bagozzi & Youjae, 1988; Browne & Cudeck, 1989; Kline, 2010; Medsker et al., 1994; Mulaik et al., 1989)

Note: RMSEA: root mean square error of approximation; SRMR: standardized root mean square residual; CFI: comparative fit index; IFI: incremental fit index.

***Table (3)* The descriptive statistics, correlations, and convergent and discriminant validity for the measurement model.**

Constructs	Alpha	CR	AVE	AVISC	1	2	3	4	5	6
1. Strategic planning	0.898	0.900	0.750	0.644	*0.866*					
2. Leadership	0.833	0.835	0.629	0.729	0.735	*0.793*				
3. Human resources	0.899	0.905	0.615	0.722	0.647	0.755	*0.784*			
4. Partnerships and resources	0.809	0.836	0.633	0.716	0.637	0.726	0.756	*0.796*		
5. Operations management	0.899	0.898	0.747	0.697	0.590	0.680	0.745	0.741	*0.789*	
6. Innovation performance	0.754	0.766	0.624	0.704	0.611	0.749	0.710	0.721	0.731	*0.790*
Mean					5.618	5.697	5.354	5.392	5.559	5.689
SD					0.866	0.863	1.032	1.016	1.044	1.022

Notes: CR: composite reliability; AVE: average variance extracted; AVISC: average interscale correlation; SD: standard deviation. The square root of the average variance extracted (AVE) is reported on the diagonal in italics for each factor.

The goodness-of-fit values were all above the recommended values for the purified measurement model as shown in Table 2. The chi-squared (χ2) test result was statistically significant; however, this test is known to be sensitive to sample size, and the result, in this case, may indicate significance despite the differences between model-implied and observed covariances having been relatively small (Kline, 2010). Thus, multiple indices were used for evaluating model fit, as is generally recommended in the literature on the SEM technique (Bollen, 1989; Schumacker & Lomax, 2010).

Satisfactory reliability for the individual latent variables was achieved. Cronbach's alpha (Cronbach, 1951) and composite reliability (Fornell & Larcker, 1981) were used to assess construct reliability. Table 3 shows the values of both Cronbach's alpha and the composite reliabilities. All constructs exceeded the recommended threshold level of 0.7 (Anderson & Gerbing, 1988).

Convergent validity was achieved for all of the constructs. All of the AVE values, as presented in Table 3, were higher than the 0.50 (i.e., 50 percent) cut-off value (Fornell & Larcker, 1981; Shook et al.,

2004), and the factor loading for each indicator was good (>0.6) (Byrne, 2010; Hair et al., 2010).

To test for discriminant validity, the square root of the AVE for each construct was analyzed, which should be greater than its correlations with the other latent constructs (Fornell & Larcker, 1981). The square root of the AVE for each latent variable is presented in the diagonal cells in Table 3. The table shows that the square root of the AVE for each latent variable was higher than its correlations with the other latent constructs. Furthermore, discriminant validity was assessed by comparing Cronbach's alpha and the average interscale correlation (AVISC). For all scales, Cronbach's alpha was higher than the AVISC, suggesting that discriminant validity had been established (Bagozzi & Phillips, 1982; Bou-Llusar et al., 2009).

Table 3 presents the descriptive statistics for the excellence management systems factors and innovation performance (mean, standard deviation [SD], and correlations). All correlations were positive and significantly different from zero, thereby confirming the expected bivariate associations (Flynn & Saladin, 2001).

Several statistical techniques were applied to examine common method bias (CMB), such as Harman's one-factor test and the more comprehensive confirmatory factor analysis (CFA) with a single-factor model (Chang et al., 2010; Podsakoff et al., 2003). The results showed that CMB was unlikely to be problematic (see Table 2).

4.2. Hypotheses testing

The structural model (Figure 1) was tested using the measures resulting from the measurement model analysis and evaluated based on fit indices, the magnitude and significance of the structural path coefficients, and the R2 (the strength of the explained variance in endogenous constructs) values (Shah & Goldstein, 2006). To determine the fit of the data to the model, several indices were used (e.g., $\chi 2$/df, CFI, RMSEA, and SRMR). These indices suggested that the overall model showed an adequate model fit ($\chi 2 = 322.246$; df = 162; $\chi 2/df = 1.989$; p = 0.00; CFI = 0.949; SRMR = 0.052; RMSEA = 0.065).

Table 4 and Figure 2 show that seven out of eight hypotheses are supported. More specifically, hypothesis 1 posits that leadership has a positive influence on strategic planning. The study results supports this view (B1 = 0.76; t = 10.77). Hypothesis 2, which posits that leadership has a positive influence on human resources, is also supported (B1 = 0.86; t = 11.01). Similarly, hypothesis 3, which posits that leadership has a positive influence on partnerships and resources, is also supported (B1 = 0.83; t = 11.82). Moreover, hypothesis 4 is also supported regarding the influence of leadership on operations management (B1 = 0.80; t = 10.97). Hypothesis 5-1 states that strategic planning has a positive influence on innovation performance. The results support this hypothesis (B1 = 0.20; t = 2.11). Hypothesis 5-2, which posits that human resources has a positive influence on innovation performance is not supported (B1 = 0.10; t = 1.04). Finally, the results support the argument of hypothesis 5-3 that partnerships and resources has a positive influence on innovation performance (B1 = 0.21; t = 2.13); the results also support the prediction of hypothesis 5-4 that operations management has a positive influence on innovation performance (B1 = 0.44; t = 4.73).

As shown in Table 4, the R2 value is relatively strong with a value of 0.58 or higher for all constructs; this result is generally above the substantial R2 level suggested by (Chin, 1998).

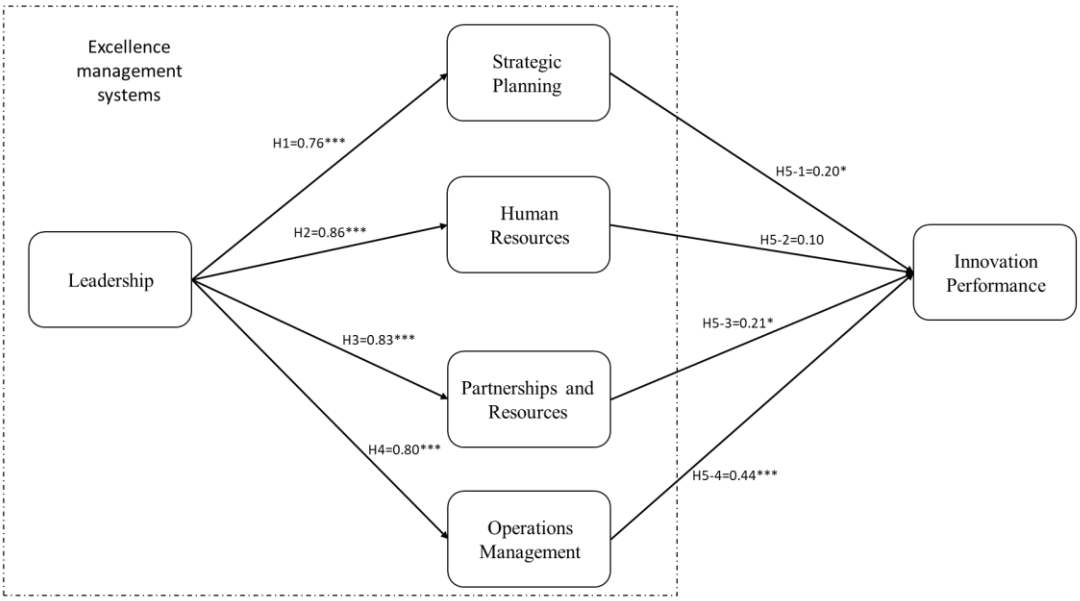

Figure (2) The research model and hypotheses results.

***Table* (*4*) The analysis results of the research model.**

Path			Coefficient	t-value	Significance	R^2
H1. Leadership	⟶	Strategic planning	0.76	10.77	Significant***	
H2. Leadership	⟶	Human resources	0.86	11.01	Significant***	
H3. Leadership	⟶	Partnerships and resources	0.83	11.82	Significant***	
H4. Leadership	⟶	Operations management	0.80	10.97	Significant***	
H5-1. Strategic planning	⟶	Innovation performance	0.20	2.11	Significant*	
H5-2. Human resources	⟶	Innovation performance	0.10	1.04	Non-significant	
H5-3. Partnerships and resources	⟶	Innovation performance	0.21	2.13	Significant*	
H5-4. Operations management	⟶	Innovation performance	0.44	4.73	Significant***	
Strategic planning						0.58
Human resources						0.74
Partnerships and resources						0.69
Operations management						0.64
Innovation performance						0.62

*p < 0.05; **p ≤ 0.010; ***p ≤ 0.001; standardized coefficients.

5. Discussion and conclusions

5.1 Discussion

Excellence management systems can be considered one of the preconditions of innovation. Academics worldwide have been encouraged to identify different key drivers of innovation. The present research is an exploratory attempt to simultaneously yet independently examine the influence of different excellence management systems factors (i.e., enablers of the SEM), and how they influence innovation performance. In doing so, the study offers a close examination and improved understanding of these interrelationships to advance the theoretical development of organizational innovation and contributes to bridging the related literature gap. Hence, the study findings contribute to the extant knowledge on excellence management systems factors that are related to innovation performance, particularly in the context of BEMs.

The research findings indicate the high predictive power of a BEM (i.e., the SEM) as a framework for the application of excellence management systems, considering the supported measurement model's reliability and validity (see Tables 2 and 3). Furthermore, the results show high values for the coefficient of determination (see Table 4), indicating the high joint explanatory power of the exogenous variables (Byrne, 2010; Hair et al., 2010).

In addition, the study results largely confirm the research hypotheses that posit the presence of direct effects existing between factors (see Figure 2 and Table 4), thus supporting the presence of multiple interrelationships, as well as synergies in the application of excellence management systems factors and the systems approach provided by BEMs.

The findings of the study illustrate the role of leadership in excellence management systems, i.e., between the causal relationships of enablers within the SEM. Leadership is significantly and positively related to all excellence management systems factors (H1-H4). The four factors of excellence management systems are human resources, strategic planning, operations management, and partnerships and resources. This was confirmed by the high direct effects between the factors and the important percentage of variance of excellence management systems factors that explain the leadership factor

(Table 5). Enhancements in leadership caused direct positive changes in each of the excellence management systems factors. This result was consistent with the results of existing research (Moon et al., 2011; Santos et al., 2016).

The findings of this study also suggest that, in general, excellence management systems factors are significantly and positively related to innovation performance. This result coincides with those in several academic studies (e.g., Kim et al., 2012; Para-González et al., 2021), despite a traditional argument indicating the impossibility of the coexistence of organizational continual process improvement and radical innovation.

More specifically, the findings of the present study indicate that strategic planning has a significant and positive effect on innovation performance (H5-1). These results converge with those obtained by Para-González et al. (2021) and Kafetzopoulos et al. (2019).Creating innovative ideas for new products or services is shown to be directly dependent on the effective efforts of developing and communicating strategies, as well as strategic goals. By engaging in these activities, strategic direction and the enhancement of competitive advantages can be achieved (EFQM, 2013; Suarez et al., 2016), thereby establishing a competitive position and improving overall organizational performance, in addition to developing and deploying management systems, operational plans and programs, and developing initiative projects and performance measurement systems to achieve strategic goals (KAQA, 2016).

Likewise, the findings of this study indicate that partnerships and resources has a significant and positive effect on innovation performance (H5-3). These results confirm previous studies (Kafetzopoulos et al., 2019; Para-González et al., 2021). The more effective organizations can manage partnerships and resources, the higher innovation performance an organization is likely to achieve. This involves planning and utilizing strategic alliances and managing financial, physical, informational, and technical resources in a manner that balances present and future needs to achieve alignment and mutual benefit for the organization and its stakeholders.

Furthermore, the findings of this study indicate that operations management has a significant and positive effect on innovation performance (H5-4). These results support Kim et al. (2012) and Lizarelli et al. (2021) empirical findings. Successfully managing organizational operations enhances innovation performance through the identification, designing, and managing processes; this is achieved by designing and managing products and services, by continuously improving processes, products, and services, by promoting and marketing products and services, and through the management of customer relationships (KAQA, 2016).

Finally, the findings of this study found no significant effect in the relationship between human resources and innovation performance (H5-2). This finding confirms the results obtained by Zeng et al. (2015). One possible reason for this may have been the potential indirect relationship (the mediation effect) between human resources and innovation performance, e.g., the mediating role of operations management (Alanazi, 2020; Kim et al., 2012); however, this result does not indicate a disagreement with the positive effect of excellence management systems on innovation performance.

Overall, considering that very few studies have examined this relationship, the contribution of this study, which investigated the influence of excellence management systems factors on innovation performance, is to confirm that excellence management systems factors impact innovation performance through the direct relationships of strategic planning, operations management, and partnerships and resources with innovation performance.

5.2 Managerial implications

The study findings also make provision for an important practical application as they provide insight into managers regarding the dominant role that leadership plays in the effective implementation of excellence management systems, and for making improvements in innovation performance. That is, leaders, in their pursuit of achieving highly innovative performance, must focus on setting a strategic direction, monitoring and reviewing the organization's management system and performance, enhancing relationships with all stakeholders, reinforcing a culture of quality, excellence, and creativity, effecting governance and social responsibility, and manage change, risks, and crises as requirements for the successful application of excellence management systems (KAQA, 2016).

Managers should be aware that the implementation of excellence management systems is only the first step towards achieving innovation performance. As previously stated, a focus on the implementation of excellence management systems as a whole, rather than on a specific factor/practice, should be adopted. Accordingly, when seeking to achieve improved innovation, managers must be encouraged to commit resources in the form of capital, effort, and time to the application of excellence management systems factors.

5.3 Limitations and future research

Several limitations to this study should be noted. The most important among these is the cross-sectional design that was applied, which prevented including definitive statements about causal relationships (Hair et al., 2010; Kline, 2010). Therefore, further research implementing a

longitudinal design is necessary to increase confidence in the causality of the suggested relationships. Moreover, the research survey was completed from a managerial perspective only and can be complemented with objective data. It is important to recognize the possibility of same-source bias that may arise in this context, which will not reflect an accurate view of reality. Thus, future research that includes participants from multiple backgrounds will be able to further test this study's results.

References

Abrunhosa, A., & Sá, P. M. E. (2008). Are TQM principles supporting innovation in the Portuguese footwear industry? *Technovation, 28*(4), 208-221.

Alanazi, M. H. (2020). The mediating role of primary TQM factors and strategy in the relationship between supportive TQM factors and organisational results: An empirical assessment using the MBNQA model. *Cogent Business & Management, 7*(1), 1771074. doi:10.1080/23311975.2020.1771074

Alanazi, M. H. (2021). Towards a further step in understanding business excellence models: a comparative approach. *Benchmarking: An International Journal, 28*(8), 2465-2495. doi:10.1108/BIJ-08-2020-0407

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: a review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411-423.

Arbuckle, J. L. (2014). *Amos 23 user's guide*. Chicago: SPSS.

Badri, A. M., Selim, H., Alshare, K., Grandon, E. E., Younis, H., & Abdulla, M. (2006). The Baldrige education criteria for performance excellence framework. *International Journal of Quality & Reliability Management, 23*(9), 1118-1157.

Bagozzi, R. P., & Phillips, L. W. (1982). Representing and testing organizational theories: A holistic construal. *Administrative Science Quarterly*, 459-489.

Bagozzi, R. P., & Youjae, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science, 16*(1), 74-94.

Becheikh, N., Landry, R., & Amara, N. (2006). Lessons from innovation empirical studies in the manufacturing sector: A systematic review of the literature from 1993–2003. *Technovation, 26*(5-6), 644-664.

Bollen, K. A. (1989). *Structural equations with latent variables*. Hoboken, NJ: John Wiley & Sons.

Bou-Llusar, J. C., Escrig-Tena, A. B., Roca-Puig, V., & Beltrán-Martín, I. (2009). An empirical assessment of the EFQM excellence model: evaluation as a TQM framework relative to the MBNQA model. *Journal of Operations Management, 27*(1), 1-22.

Browne, M. W., & Cudeck, R. (1989). Single sample cross-validation indices for covariance structures. *Multivariate Behavioral Research, 24*(4), 445-455.

Byrne, B. M. (2010). *Structural equation modeling with AMOS: basic concepts, applications, and programming* (2nd ed.). New York: Routledge.

Calvo-Mora, A., Domínguez-CC, M., & Criado, F. (2018). Assessment and improvement of organisational social impact through the EFQM Excellence Model. *Total Quality Management & Business Excellence, 29*(11-12), 1259-1278.

Calvo-Mora, A., Picón-Berjoyo, A., Ruiz-Moreno, C., & Cauzo-Bottala, L. (2015). Contextual and mediation analysis between TQM critical factors and organisational results in the EFQM Excellence Model framework. *International Journal of Production Research, 53*(7), 2186-2201.

Calvo-Mora, A., Ruiz-Moreno, C., Picón-Berjoyo, A., & Cauzo-Bottala, L. (2014). Mediation effect of TQM technical factors in excellence management systems. *Journal of Business Research, 67*(5), 769-774.

Chang, S.-J., van Witteloostuijn, A., & Eden, L. (2010). From the editors: common method variance in international business research. *Journal of International Business Studies, 41*(2), 178-184.

Chin, W. W. (1998). Commentary: issues and opinion on structural equation modeling. *Mis Quarterly, 22*(1), Vii-Xvi.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297-334.

Daft, R. L. (1978). A dual-core model of organizational innovation. *Academy of Management Journal, 21*(2), 193-210.

Dewar, R. D., & Dutton, J. E. (1986). The adoption of radical and incremental innovations: An empirical analysis. *Management Science, 32*(11), 1422-1433.

Doeleman, H., ten Have, S., & Ahaus, C. (2014). Empirical evidence on applying the European Foundation for Quality Management Excellence Model, a literature review. *Total Quality Management & Business Excellence, 25*(5-6), 439-460.

EFQM. (2013). *EFQM Excellence Model*. Brussels, Belgium: European Foundation for Quality Management.

Ettlie, J. E., Bridges, W. P., & O'keefe, R. D. (1984). Organization strategy and structural differences for radical versus incremental innovation. *Management Science, 30*(6), 682-695.

Flynn, B. B., & Saladin, B. (2001). Further evidence on the validity of the theoretical models underlying the Baldrige criteria. *Journal of Operations Management, 19*(6), 617-652.

Fonseca, L. (2021). The EFQM 2020 model. A theoretical and critical review. *Total Quality Management & Business Excellence*, 1-28.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50. doi:10.2307/3151312

Goetsch, D. L., & Davis, S. B. (2006). *Quality Management: Introduction to Total Quality Management for Production,Processing,and Services*. New Jersey: PrenticeHall.

Gómez-López, R., Serrano-Bedia, A. M., & López-Fernández, M. C. (2016). Motivations for implementing TQM through the EFQM model in Spain: An empirical investigation. *Total Quality Management & Business Excellence, 27*(11-12), 1224-1245.

Gómez Gómez, J., Martínez Costa, M., & Martínez Lorente, Á. R. (2011). A critical evaluation of the EFQM model. *International Journal of Quality & Reliability Management, 28*(5), 484-502. doi:10.1108/02656711111132544

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). London: Pearson Education.

He, Z., Hill, J., Wang, P., & Yue, G. (2011). Validation of the theoretical model underlying the Baldrige criteria: evidence from China. *Total Quality Management & Business Excellence, 22*(2), 243-263. doi:10.1080/14783363.2010.545562

Heras-Saizarbitoria, I., Marimon, F., & Casadesús, M. (2012). An empirical study of the relationships within the categories of the EFQM model. *Total Quality Management & Business Excellence, 23*(5-6), 523-540. doi:10.1080/14783363.2012.669541

Hietschold, N., Reinhardt, R., & Gurtner, S. (2014). Measuring critical success factors of TQM implementation successfully–a systematic literature review. *International Journal of Production Research, 52*(21), 6254-6272.

Hurmelinna-Laukkanen, P., Sainio, L. M., & Jauhiainen, T. (2008). Appropriability regime for radical and incremental innovations. *R&d Management, 38*(3), 278-289.

Kafetzopoulos, D., Gotzamani, K., & Skalkos, D. (2019). The relationship between EFQM enablers and business performance. *Journal of Manufacturing Technology Management, 30*(4), 684-706. doi:10.1108/JMTM-06-2018-0166

KAQA. (2011). *King Abdul Aziz Quality Award criteria*. Riyadh: King Abdul Aziz Quality Award.

KAQA, K. A. A. Q. A. (2016). *Business excellence model for King Abdul Aziz Quality Award*. Riyadh: King Abdul Aziz Quality Award.

Kim, D.-Y., Kumar, V., & Kumar, U. (2012). Relationship between quality management practices and innovation.

Journal of Operations Management, 30(4), 295-315.

Kline, R. B. (2010). *Principles and practice of structural equation modeling* (3rd ed.). New York: Guilford Publications.

Landis, R. S., Beal, D. J., & Tesluk, P. E. (2000). A comparison of approaches to forming composite measures in structural equation models. *Organizational Research Methods, 3*(2), 186-207.

Lee, D., & Lee, D. H. (2013). A comparative study of quality awards: evolving criteria and research. *Service Business, 7*(3), 347-362.

Lizarelli, F. L., de Toledo, J. C., & Alliprandini, D. H. (2021). Relationship between continuous improvement and innovation performance: an empirical study in Brazilian manufacturing companies. *Total Quality Management & Business Excellence, 32*(9-10), 981-1004.

Mai, F., Ford, M. W., & Evans, J. R. (2018). An empirical investigation of the Baldrige framework using applicant scoring data. *International Journal of Quality & Reliability Management, 35*(8), 1599-1616.

Martínez-Costa, M., & Martínez-Lorente, A. R. (2008). Does quality management foster or hinder innovation? An empirical study of Spanish companies. *Total Quality Management, 19*(3), 209-221.

Medsker, G. J., Williams, L. J., & Holahan, P. J. (1994). A review of current practices for evaluating causal models in organizational behavior and human resources management research. *Journal of Management, 20*(2), 439-464.

Meyer, S. M., & Collier, D. A. (2001). An empirical test of the causal relationships in the Baldrige Health Care Pilot Criteria. *Journal of Operations Management, 19*(4), 403-426.

Mohammad, M., & Mann, R. (2010). National quality/business excellence awards in different countries. *A research undertaken on behalf of the National Institute of Standards and Technology (NIST)*. Retrieved from https://www.nist.gov/document-15832

Mohammad, M., Mann, R., Grigg, N., & Wagner, J. P. (2011). Business Excellence Model: An overarching framework for managing and aligning multiple organisational improvement initiatives. *Total Quality Management & Business Excellence, 22*(11), 1213-1236.

Moon, J.-Y., Lee, S.-C., Yong-Seung, P., & Suh, Y.-H. (2011). A study on the causal relationships in the Korean National Quality Award model. *Total Quality Management & Business Excellence, 22*(7), 705-726. doi:10.1080/14783363.2011.585767

Mulaik, S. A., James, L. R., Van Alstine, J., Bennett, N., Lind, S., & Stilwell, C. D. (1989). Evaluation of goodness-of-fit indices for structural equation models. *Psychological Bulletin, 105*(3), 430-445.

Naylor, G. (1999). Using the Business Excellence Model to develop a strategy for a healthcare organisation. *International Journal of Health Care Quality Assurance, 12*(2), 37-45. doi:doi:10.1108/09526869910261240

Para-González, L., Jiménez-Jiménez, D., & Martínez-Lorente, Á.-R. (2021). Does EFQM enhance learning and innovation? *Total Quality Management & Business Excellence*, 1-25.

Para-González, L., Jiménez-Jiménez, D., & Martínez-Lorente, A. (2018). The link between people and performance under the EFQM excellence model umbrella. *Total Quality Management & Business Excellence*, 1-21.

Peng, D. X., Schroeder, R. G., & Shah, R. (2008). Linking routines to operations capabilities: A new perspective. *Journal of Operations Management, 26*(6), 730-748.

Peng, X., & Prybutok, V. (2015). Relative effectiveness of the Malcolm Baldrige National Quality Award categories. *International Journal of Production Research, 53*(2), 629-647.

Peng, X., Prybutok, V., & Xie, H. (2019). Integration of supply chain management and quality management within a quality focused organizational framework. *International Journal of*

Production Research, 58(2), 448-466. doi:10.1080/00207543.2019.1593548

Pfeifer, T., Siegler, S., & Varnhagen, V. (1998). Business excellence through a robust development process for innovative products. *Total Quality Management, 9*(4-5), 191-194.

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903.

Prajogo, D. I., & Hong, S. W. (2008). The effect of TQM on performance in R&D environments: A perspective from South Korean firms. *Technovation, 28*(12), 855-863.

Propris, L. D. (2002). Types of innovation and inter-firm co-operation. *Entrepreneurship & Regional Development, 14*(4), 337-353.

Psomas, E. L., & Jaca, C. (2016). The impact of total quality management on service company performance: evidence from Spain. *International Journal of Quality & Reliability Management, 33*(3), 380-398.

Rampersad, G., Quester, P., & Troshani, I. (2010). Managing innovation networks: Exploratory evidence from ICT, biotechnology and nanotechnology networks. *Industrial Marketing Management, 39*(5), 793-805.

Sadikoglu, E., & Zehir, C. (2010). Investigating the effects of innovation and employee performance on the relationship between total quality management practices and firm performance: An empirical study of Turkish firms. *International Journal of Production Economics, 127*(1), 13-26.

Santos-Vijande, M. L., & Alvarez-Gonzalez, L. I. (2007). TQM and firms performance: an EFQM excellence model research based survey. *International Journal of Business Science and Applied Management, 2*(2), 21-41.

Santos-Vijande, M. L., & Álvarez-González, L. I. (2007). Innovativeness and organizational innovation in total quality oriented firms: The moderating role of market turbulence. *Technovation, 27*(9), 514-532.

Santos, M. B., Monteiro, P. R. R., Gonçalves, M. A., & Camilo, R. D. (2016). Reference models and competitiveness: an empirical test of the management excellence model (MEG) in Brazilian companies. *Total Quality Management & Business Excellence, 29*(3-4), 346-364. doi:10.1080/14783363.2016.1188656

Schumacker, R. E., & Lomax, R. G. (2010). *A beginner's guide to structural equation modeling* (3rd ed.). New York: Routledge.

Shah, R., & Goldstein, S. M. (2006). Use of structural equation modeling in operations management research: looking back and forward. *Journal of Operations Management, 24*(2), 148-169.

Shook, C. L., Ketchen, D. J., Hult, G. T. M., & Kacmar, K. M. (2004). An assessment of the use of structural equation modeling in strategic management research. *Strategic Management Journal, 25*(4), 397-404.

Sila, I., & Ebrahimpour, M. (2005). Critical linkages among TQM factors and business results. *International Journal of Operations & Production Management, 25*(11), 1123-1155.

Singh, P. J., & Smith, A. J. (2004). Relationship between TQM and innovation: an empirical study. *Journal of Manufacturing Technology Management*.

Suarez, E., Calvo-Mora, A., & Roldán, J. L. (2016). The role of strategic planning in excellence management systems. *European Journal of Operational Research, 248*(2), 532-542.

Suárez, E., Calvo-Mora, A., Roldán, J. L., & Periáñez-Cristóbal, R. (2017). Quantitative research on the EFQM excellence model: A systematic literature review (1991–2015). *European Research on Management and Business Economics, 23*(3), 147-156.

Talwar, B. (2011). Business excellence models and the path ahead…. *The TQM Journal, 23*(1), 21-35.

Tan, K. C. (2002). A comparative study of 16 national quality awards. *The TQM Magazine, 14*(3), 165-171.

Yusr, M. M., Mokhtar, S. S. M., Othman, A. R., & Sulaiman, Y. (2017). Does interaction between TQM practices and knowledge management processes enhance the innovation performance? *International Journal of Quality & Reliability Management, 34*(7), 955-974.

Zeng, J., Phan, C. A., & Matsui, Y. (2015). The impact of hard and soft quality management on quality and innovation performance: An empirical study. *International Journal of Production Economics, 162*, 216-226.

Zhou, L., Barnes, B. R., & Lu, Y. (2010). Entrepreneurial proclivity, capability upgrading and performance advantage of newness among international new ventures. *Journal of International Business Studies, 41*(5), 882-905.

Appendix

***Table* (*A1*) Measurement scales[a], factor loadings[b], and related references.**

Leadership
Senior management orientation[1] – 0.777
Long-term customer satisfaction is established as the organization's mission and basic principle.
Leaders underscore the factors that give rise to a need for change and the pre-emptive change required in the organization.
Leaders provide a plan detailing the different stages of change and secure the investment, resources, and support required to achieve change.
Leaders allocate resources for continuous improvement of the management system.
Leaders interact with customers and keep in mind their contributions when designing goods and/or services*.
Leaders always consider stakeholder groups*.
Leaders' activities seek to provide value to the community and protect the environment*.
Leaders listen and support employees and encourage them to take part in deciding and managing total quality policies and plans.
Organizational performance auditing[1] – 0.644.
Leaders personally assess the application and progress of total quality principles*.
Leaders measure and review the effectiveness of organizational change and share the knowledge that is obtained.
Encouraging and promoting a culture of quality [1] – 0.777.
Leaders take on the responsibility of developing quality-oriented management systems.
Leaders acknowledge and reward employees' contributions to improving quality.
Strategic planning
Strategic planning management process[2] – 0.886.
The organization develops corporate strategic plans based on analyzing key operational factors and relevant data.
The organization creates clear strategic plans, objectives, and timetables for product/service quality improvement.
Employees can provide their opinions on strategic plans and business objectives.
Strategic objectives can balance all stakeholders' requirements*.
Strategic goals and action plan[3] – 0.900.
Organizational processes and their interrelationships are identified (e.g., by translating strategies into aligned processes, projects, and organizational structures).
Quality policies are translated into a set of specific and measurable objectives.
Leaders inform employees about the organization's quality strategy.
Every member of the organization is familiar with the organizational mission and objectives*.
Research and development[2] – 0.829.
The organization uses key performance indicators (KPIs) to trace the deployment of strategic objectives and compares its KPIs with those of competitors or other benchmarks.
The organization invests sufficient resources to achieve strategic objectives.
The organization systematically communicates strategic plans and objectives in a "top-down" fashion
Human resources
Training and education[1] – 0.788.
Employees are provided with suitable preparation for their roles and are qualified to solve quality problems.
Employees are continuously trained in the principles of quality, teamwork, and job-specific skills
Employee participation[1] – 0.713
Employees are actively involved in quality-related activities and the success of the organization.
Employees can make decisions independently in terms of the quality and end results of the product/service*.
Human resources planning and selection[2] – 0.834
The organization has an effective recruiting process through which to hire employees with the required capabilities (e.g., skills, certifications, and staffing levels).
The organization takes a number of approaches to explore employees' potential and to help them to achieve their career goals.
Employee satisfaction and work environment[4] – 0.797
The organization carefully designs the work environment and facilities to maximize employee benefits and well-being.
The organization emphasizes employees' health, safety, and well-being.
The organization conducts employee attitude surveys regularly.

Performance and appreciation[3] – 0.739
Leaders explicitly recognize employees' achievements at work.
Saudization[5] – 0.772
A Saudization plan is integrated into all operations undertaken by the organization.
The organization's work environment standards (e.g. promotions, training) develop staff at a national level.
Saudi employees are encouraged to work in roles where the rate of Saudization is low*.

Suppliers and partners

Selecting, assessing and, improving supplier services quality[1] – 0.896.
The organization's suppliers provide technical assistance and/or in general help in other ways to improve its products and/or services.
The organization is prepared to form alliances with partners and collaborators in the market to achieve a competitive advantage.
Managing long-term partnerships and agreements[1] – 0.654.
The organization has long-term quality agreements with its suppliers.
Focusing on local suppliers and products[5] – 0.838.
Policies are in place for managing relationships with local suppliers*.
Verification and the selection of local suppliers are implemented throughout the organization.
The organization has procedures in place to ensure that local supplier outputs conform to its requirements.
Preference is given to local suppliers, products, and/or services

Operations management

Systems of quality, environment, power, health, and occupational safety management[1] – 0.856.
Processes are designed and defined explicitly.
All processes, procedures, and products/services are assessed regularly to drive improvement and innovation.
New products and/or services are designed thoroughly and meticulously before being manufactured and marketed.
Continuous improvement[1] – 0.872.
Quality-related criteria prevail over speed and cost when developing new products/services.
The different organizational departments liaise with one another during the development of new products/services.
The organization regularly asks its customers what they want from its products/services in the present and in the future.
Applying recognized Saudi or (international) standard specifications[5] –0.802.
The organization applies recognized standard specifications (e.g., Saudi or international standards).

Innovation performance

The organization's current performance is superior to its competitors or other benchmarks in terms of the following items:
the speed of new product introduction[6] – 0.891
product innovation[6] – 0.742

Notes:

(a) Items were evaluated then refined using a pretest through groups of experts and targeted respondents who helped to ensure that they were written at a level that the respondents could easily understand to reduce potential response errors.
(b) Factor loadings are standardized.
(1) Santos-Vijande and Alvarez-Gonzalez (2007).
(2) He et al. (2011).
(3) Bou-Llusar et al. (2009).
(4) Xiang et al. (2010).
(5) KAQA (2011).
(6) Zeng et al. (2015).
(*) Dropped items.

العلاقة بين أنظمة إدارة التميز وأداء الابتكار: دراسة تطبيقية

محمد بن حمدان العنزي
أستاذ مشارك- قسم العلوم الإدارية
كلية الملك فهد الأمنية، الرياض، المملكة العربية السعودية
البريد الالكتروني: anazim@kfsc.edu.sa

الكلمات المفتاحية: أنظمة إدارة التميز، الابتكار، السعودية، نموذج المؤسسة الأوروبية لإدارة الجودة، إدارة الجودة، نمذجة المعادلات البنائية

ملخص البحث: الغرض من هذه الدراسة هو دراسة تأثير عوامل أنظمة إدارة التميز على أداء الابتكار باستخدام نموذج التميز السعودي كإطار عمل. تم فحص الفرضيات المقترحة باستخدام بيانات تم جمعها من الشركات السعودية من خلال تطبيق أسلوب نمذجة المعادلات البنائية. تشير النتائج إلى أن التخطيط الاستراتيجي وإدارة العمليات والشراكات والموارد لها تأثير مباشر على أداء الابتكار، كما أن القيادة تعتبر سابقة لها. تضيف هذه الدراسة إلى المعرفة الحالية وتساعد المدراء من خلال التأكيد على أن أنظمة إدارة التميز هي أحد أساسيات الابتكار وأنه يجب إدارتها ككل لتحقيق أداء ابتكاري عالي.