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A modified EFQM Excellence Model for effective evaluation in the hotel industry

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The objective of this study is to develop a modified European Foundation for Quality Management (EFQM) Excellence Model with new scores particularly for the hotel industry by using the fuzzy analytic hierarchy process, a multi-criteria decision-making method. Application of the EFQM Excellence Model for self-assessment is popular, but the evaluation scores underpinning the current EFQM Excellence Model are unchanged for all industries. This affects the accuracy and effectiveness of evaluation. The findings indicate that new Enablers receive a score of 450 points, and new Results receive a score of 550 points, and the deviation is substantial from the conventional EFQM Excellence Model, under which Enablers and Results each score 500 points. Surprisingly, the new Customer Results in the modified EFQM Excellence Model earn a score of 230 points; this indicates that the customer domain is the critical success factor for the hotel industry. The new score of each indicator is specified; the limitations and further study are also discussed.

Keywords: EFQM Excellence Model; hotel industry; fuzzy analytic hierarchy process

1. Introduction

The hotel industry is large and ubiquitous in every country; it provides a range of products and services and affects nearly every household in one way or another. Many studies have proven that effective quality management is one of the enablers for the hotel industry to attract more customers (Benavides-Chicón & Ortega, 2014; Camison, 1996; Coyle & Dale, 1993). Quality in the hotel industry dictates the success of businesses (Nasution & Mayondo, 2008), and thus hotel organisations need to know whether or not they have conducted the correct performance evaluation and that the strategies they apply are meeting their objectives. Evidently, hotel organisations need an appropriate measurement system or tool to identify whether an organisation has the appropriate approaches in place to achieve the targets it has set or to track performance and assess whether objectives have been met. In Europe and the USA, the European Foundation for Quality Management (EFQM) Excellence Model serves such functions (Michalska, 2008; Westerveld, 2003); the EFQM Excellence Model is a holistic diagnosing tool for sustaining excellence. The present EFQM Excellence Model contains generic management terminology that has been applied successfully in organisations of different sizes and kinds in many countries (Doeleman, ten Have, & Ahaus, 2014). Thousands of European organisations have used the model to evaluate their performance, but they have also encountered problems regarding the accuracy and consistency of scoring when using the scores derived from the conventional EFQM Excellence Model, because the given scores were never adjusted or amended by industries (Calvo-Mora, Leal, & Roldan, 2005). This raises the question of

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whether it makes any sense to use an arbitrary weight structure to assess organisational excellence and performance. In practice, different industries should give varying criteria different scores. Without differentiating scores, managers have no confidence and are dubious about accepting the EFQM Excellence Model. To date, little use has been made of the underpinning criteria or the data collected from the hotel industry, and the scores of the EFQM Excellence Model have not yet been tested empirically in the hotel industry. To provide hotel organisations a tested and less complex EFQM Excellence Model, this study uses the fuzzy analytic hierarchy process (Fuzzy AHP), which is a fuzzy reasoning based on multi-expert judgement. Fuzzy AHP provides a robust methodology in the self-assessment process against the criteria of any unweighted model to minimise the scoring variation among members regarding the attributes selected. In this way, a constructive and easy-to-use EFQM Excellence Model with modified scores is developed and recommended to managers in the hotel industry. This model could provide managers or assessors with a simple and easy way to use the EFQM Excellence Model, particularly those with less experience, or those who are unfamiliar with self-management implementation. It could also serve as a comprehensive tool for regular use to measure changes in key assets and issues related to hotel operations.

2. Literature review

2.1. EFQM Excellence Model

The EFQM Excellence Model defines an alternative framework in which learning and improvement can be integrated into the design, management, and evaluation of a programme, its organisation, and its systems (Black & Groombridge, 2010). Managers need to understand the wider issues concerning their organisations and focus on the relevant data and measures to address them (Tutuncu & Kucukusta, 2007). In practice, the EFQM Excellence Model is a non-prescriptive framework that enables organisations to integrate the existing and planned initiatives, while removing duplication and identifying gaps (Dahlgaard, Chen, Jang, & Dahlgaard-Park, 2013). The latest version of the EFQM Excellence Model was announced in 2010, as shown in Figure 1 (European Foundation for Quality Management [EFQM], 2010). The arrows emphasise the dynamic nature of the model. They demonstrate that innovation and learning have helped to improve enablers,



Figure 1. The EFQM Excellence Model. Source: EFQM (2010).

which in turn lead to improved results. This model has been used successfully by a large number of business organisations in Europe and the USA (Davies, 2008). The present EFQM Excellence Model is a non-prescriptive framework with nine criteria, of which five are Enablers: Leadership; People; Strategy; Partnerships and Resources; and Processes, Products, and Services. The remaining criteria are Results including People Results, Customer Results, Society Results, and Key Results. The Enablers produce Results (Conti, 2007; Davies, 2008; Jacobs & Suckling, 2007) and delineate what an organisation does. Both Enablers and Results are given 500 points (Olaru, Stoleriu, & Sandru, 2011), and all nine criteria have different scores that are used to measure how things are conducted in the organisation. Each criterion has a definition and a set of sub-criteria. The sub-criteria raise questions that should be considered in an evaluation (Calvo-Mora, Leal, & Rolda, 2006). Application of the EFQM Excellence Model is recognised to offer the following benefits: (1) As a tool for self-assessment, it delivers a picture of how healthy an organisation is. (2) As a management model, it defines aspirations for the organisation's capability and performance. (3) As an element of self-assessment, it identifies the weaknesses and strengths of an organisation. (4) It provides a basis for comparison with other kinds of organisations. (5) It helps an organisation to identify areas for improvement (Angeli, 2009). Numerous studies have applied the EFQM Excellent Model to conduct self-management in many domains, such as social (Marrewijk, Wuisman, Cleyn, Timmers, & Linnanen, 2004; Olaru et al., 2011), tourism (Go & Govers, 2000), health (Minkman, Ahaus, & Huijsman, 2007; Nabitz, Brink, & Jansen, 2005; Sánchez et al., 2006), management (Yang, Dale, & Siow, 2001), education (Saraiva, Da Rosa, & d'Orey, 2003; Tari, 2008), project (Westerveld, 2003), and strategy (Naylor, 1999). Evidently, using the EFQM Excellence Model as a diagnostic tool is a widely accepted practice among a number of domains for performance assessment (Pesic & Dahlgaard, 2013). However, companies struggle to solve the many problems they face, and many companies skip the model because it seems too complex to understand, and they fear that too much time will be consumed implementing it. One of the reasons behind these problems is that the model generally pays little attention to contextual scores; the evaluation scores should vary depending on the current maturity level of the company and industry (Calvo-Mora, Picón-Berjoyo, Ruiz-Moreno, & Cauzo-Bottala, 2015; Dahlgaard & Dahlgaard-Park, 2004).

2.2. Self-assessment

The process of self-assessment is a catalyst for driving business improvement (Samuelsson & Nilsson, 2002) and positively affects the key results of the organisation (Calvo-Mora, Navarro-García, & Periañez-Cristobal, 2015). The EFQM Excellence Model defines self-assessment as a comprehensive, systematic, and regular review by an organisation of its activities and results referenced against the EFQM Excellence Model (Kim, Kumar, & Murphy, 2010; Rusjan, 2005). The self-assessment process allows the organisation to discern clearly its strengths, weaknesses, and areas in which improvements could be made, and the improvement actions are then monitored for better performance. More specifically, the EFQM Excellence Model can help managers identify their organisation's managerial problems and areas for improvement (Bou-Llusar, Escrig-Tena, Roca-Puig, & Beltra'n-Martin, 2009; Gómez Gómez, Martínez Costa, & Martinez Lorente, 2011) and provides a structured focus with which to undertake the self-assessment (Calvo-Mora, Navarro-García, & Periañez-Cristobal, 2015). In the current EFQM Excellence Model, Enablers and Results are two main criteria, and they score 500 points each. Furthermore,

there are 9 sub-criteria available and 32 sub-criteria (Suarez, Calvo-Mora, & Roldan, 2016), each of which has a different score. In this study, the EFOM Excellence Model is structured into four levels: we only develop the EFQM Excellence Model for the hotel industry under three levels. The fourth level is completely open, and its content should be defined by the company itself. Therefore, it falls outside the purpose of discussion in this study. According to the present scoring system, assessors give a score to each sub-criterion against the specific guidelines detailed in the latest version of the EFQM Excellence Model. The score is the result of a decision made by individual assessors through a comprehensive analysis of all of the information that was provided to them. The assessment represents the judgement of an organisation's achievements across a range of areas related to each sub-criterion in the EFOM Excellence Model. In scoring the assessment and review, assessors will consider the measurements taken and the improvements that have been identified. Taking account of all the mentioned factors, the assessors usually use the Radar diagram to assign scores in each of the enabler sub-criteria (Nabitz, Schramade, & Schippers, 2006). To investigate the phenomena of selfassessment, there are a number of methods suggested by the EFOM Excellence Model, including the Questionnaire approach, Matrix chart approach, Workshop approach, Pro Forma approach, and Award Simulation approach (Rusjan, 2005). Many authors have highlighted these approaches applied in many medical, healthcare, educational, and industrial organisations (Camisón, Flor, Cruz, & Küster, 1996; Gene-Badia, Jodar-Sola, Peguero-Rodriguez, Contel-Segura, & Moliner-Molins, 2001; Vernero, Nabitz, Bragonzi, Rebelli, & Molinari, 2007; Vogt, 2001; Weggeman & Groeneveld, 2005). In view of this, using the EFQM Excellence Model for self-assessment is viable.

2.3. Why does the hotel industry need a criteria-rearranged EFQM Excellence Model?

Performance assurance is an item high on the agenda within the hotel industry. The use of the EFQM Excellence Model for performance evaluation is widely accepted. The evaluation scores on the EFQM Excellence Model are calculated by multiplying the predetermined weights of each criterion. The problem is that there is no difference among industries, it is not objective, and the results are questionable. A well-tested self-management tool must be objective and demonstrate the following advantages: it meets customers' needs and the expectations of service quality in the results; it identifies areas of improvement and increases corporate competitiveness with the help of benchmarking (Kapiki, 2012). Although the EFQM Excellence Model is non-descriptive, it has been used by researchers in the private and public sectors (Jones, Lockwood, & Bowen, 2004; Ozdemir & Kozak, 2009). However, some scholars (Calvo, Picón, Ruiz, & Cauzo, 2014; Escrig & de Menezes, 2015) have highlighted the complex structure in the EFQM Excellence Model criteria, and thus the adaptation of the EFQM Excellence Model must consider the industry to which the business belongs; it is not objective in applying the same criterion scores to all businesses (Politis, Litos, Grigoroudis, & Moustakis, 2009). More specifically, the current EFQM Excellence Model has not been used to perform a cross-analysis of the views of performance from the standpoint of management and external customers in the hotel industry. For example, the criteria of evaluation used in the hotel industry should give different scores from those used in the manufacturing, retail banking, and healthcare industries. Briefly speaking, the criteria scores must be consistent with the business type involved and adjustments must be made accordingly (Shirshamsi & Ashoub, 2012). As such, it is necessary to create a new structure of scores for the hotel

industry, particularly a modified EFQM Excellence Model developed within this study for the hotel industry.

3. Methodology

3.1. Analytic hierarchy process

Constructing a proper and distinctive model for identifying organisational performance is a multi-objective decision-making problem that requires consideration of a number of attributes or elements. The AHP allows decision-makers to model a complex problem in a hierarchical structure, showing the relationships of the goal, criteria, and sub-criteria through multi-expert judgement. The AHP also enables decision-makers to derive ratio-scale priorities or weights as opposed to arbitrarily assigning them. The AHP is composed of several previous concepts and techniques, such as hierarchical structuring of complexity, pairwise comparisons, redundant judgements, an eigenvector method for deriving weights, and consideration for consistency (Saaty, 2008). Given this, the AHP not only supports decision-makers by enabling them to structure complexity and exercise judgement, but also allows them to incorporate both objective and subjective considerations in the decision-making process (Yeap, Ignatius, & Ramayah, 2014). The development of a new EFQM Excellence Model for the hotel sector is a wide-ranging determination problem requiring a robust method that can handle a variety of criteria. The application of the AHP is compatible with self-assessment (Yang et al., 2001), as the AHP is one of the multi-criteria decision-making methods that can determine the relative weights of these elements of hierarchy and compare alternatives along these criteria and rank them in order of importance. Figure 2 illustrates the phase of the AHP, an illustration based on the Balanced Scorecard model for performance evaluation. It boasts a hierarchical structure and divides the decision goal into the following main steps: the decision goal is defined and the decision problem is decomposed into a hierarchy of decision criteria and sub-criteria clusters. Subsequently, each criterion and sub-criterion is compared, and the relevance of the criteria and sub-criteria is assessed in comparative judgements on pairs. Finally, in the hierarchical composition, criteria and sub-criteria are prioritised to yield an overall ranking (Saaty, 1980). Therefore, the AHP can be used to construct an evaluation framework with respect to the EFQM Excellence Model. The AHP has been used as a decision-making tool for modelling unstructured problems in the fields of tourism (Crouch, 2011; Hong, 2009; Law, 2007; Park & Yoon, 2011), healthcare (Brent, Rogers, Ramabitsa-Siimane, & Rohwer, 2007; Liberatore & Nydick, 2008), management (Ju & Wang, 2012; Kuo & Liang, 2012; Wu, Tzeng, & Cheng, 2009), sociology, and economics (Wong & Li, 2008). Numerous studies have investigated the tourism, hospitality, leisure phenomena utilising the AHP approach to develop marketing strategies, assess opportunities, and enhance competitiveness (Ali & Raif, 2012; Huang & Wang, 2011; Kahraman, Cebeci, & Ruan, 2004; Wang & Tsai, 2012). In these studies, Saaty's (1980) scale was used to compute a numerical rating. When using such an approach, the verbal judgements made by the decision-makers are translated into numbers, as shown in Table 1.

A conventional AHP questionnaire format on a nine-point rating scale indicating the relative importance of each criterion in the same cluster is used, as shown in Figure 3, where 1 = Two activities contribute equally to the objective, 3 = Judgement slightly favours one activity over another, 5 = Judgement strongly favours one activity over another, 7 = An activity is favoured very strongly over another, 9 = The evidence favouring one activity over another is of the highest possible order of affirmation. With this focus, a group of 15 experts from the disciplines of academics, practitioners, and



Evaluation process

Figure 2. Phase of the AHP. Source: Saaty (1980).

government officials in the hotel field were recruited on the basis of a stated interest in the topic and conducted pair-wise comparisons for the AHP questionnaires. In this study, Power Choice 2.5 software was utilised to determine weights and develop the structure of the new EFQM Excellence Model.

3.2. Fuzzy environment approach

Because decision-makers usually feel more confident giving interval judgements rather than expressing their judgements in the form of single numeric values, the use of the conventional AHP approach may not fully reflect human thinking. This discrepancy arises

Intensity of importance	Intensity of importance in linguistic variables
1	Equal importance
3	Exact importance
5	Perfect importance
7	Very strong importance
9	Stronger importance
2, 4, 6, 8	Intermediate values between adjacent values

Table 1. Scales for pair-wise comparison.

Criterion A	Extreme importance		Very strong importance		Strong importance		Moderate importance		Equal importance		Moderate importance		Strong importance		Very strong importance		Extreme importance	Criterion B
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Financial																		Customer
Financial																		Learning & Growth
Financial																		Internal Business
Customer																		Learning & Growth
Customer																		Internal Business
Learning & Growth																		Internal Business

Figure 3. AHP questionnaire format.

because the preferences are difficult to identify and can be fuzzy or vague. The Fuzzy AHP method can tolerate vagueness or ambiguity (Mikhailov & Tsvetinov, 2004). In other words, the Fuzzy AHP is capable of capturing a human appraisal of ambiguity when complex multi-attribute decision-making problems are considered (Erensal, Oncan, & Demircan, 2006). In many papers, the application of the Fuzzy AHP method has been considered in complex decision-making, ranking, and selection (Ali & Raif, 2012). For example, Dodangeh, Yusuff, and Jassbi (2011) used fuzzy logic in EFQM to solve uncertainties. Table 2 shows the membership function of linguistic scales as applied in this study. Among the shapes of the fuzzy number, triangular is the most popular. This paper applies the triangular fuzzy number represented with three points $\tilde{A} = (l, m, u)$, where three real numbers $l \le m \le u$, and m is the modal value, l stands for the lower bound, and u stands for the upper bound as shown in Equation (1) and Figure 4.

$$\mu A(X) = \begin{cases} \frac{(x-l)}{(m-l)}, & l \le x \le m \\ \frac{(u-x)}{(u-m)}, & m \le x \le u \\ 0, & \text{otherwise} \end{cases}.$$
(1)

Crisp value	Linguistic scale	Fuzzy value	Inverse fuzzy value		
1	Equal importance	(1, 1, 3)	(1/3, 1, 1)		
3	Exact importance	(1, 3, 5)	(1/5, 1/3, 1)		
5	Perfect importance	(3, 5, 7)	(1/7, 1/5, 1/3)		
7	Very strong importance	(5, 7, 9)	(1/9, 1/7, 1/5)		
9	Stronger importance	(7, 9, 11)	(1/11, 1/9, 1/7)		

Table 2. Membership function of linguistic scales.



Figure 4. Triangular fuzzy numbers.

4. Results and discussion

4.1. Results

The results are as shown in Table 3. The criterion weights are quite different from the present EFOM Excellence Model, as shown in Figure 1 (EFOM, 2010). It appears that experts from the hotel industry assign the weights of the EFQM Excellence Model inconsistently, since most of the estimated weights are pretty far off the mark set by the conventional EFQM Excellence Model. Given this, Figure 5 represents the new EFQM Excellence Model, with criterion weights developed by this study for the hotel industry. Surprisingly, the results indicated that the highest score indicator was Customer Results (Scores = 230 points), followed by Products and Services (Scores = 135 points), People Results (Scores = 120 points), Key Results (Scores = 110 points), Leadership (Scores = 105 points), Society Results (Scores = 90 points), People (Scores = 85 points), Strategy (Scores = 70 points), and Partnership and Resources (Scores = 55 points), which emerged as the least important. Evidently, the EFQM Excellence Model with new criterion scores rated by experts for the hotel industry greatly differs from the present EFQM Excellence Model, which tells us that during the adoption of the EFQM Excellence Model, the criterion scores have to be adjusted in accordance with the business type. Without making such an adjustment, the assessment action is inaccurate and meaningless.

					-	
Level 1/Goal	Level 2/ Dimensions	Scores	Level 3/Indicators	Relative scores	Rank	
The EFQM Model for	A. Enablers	450	A1. Leadership	105	5	
the hotel industry			A2. People	85	7	
			A3. Strategy	70	8	
			A4. Partnership & Resources	55	9	
			A5. Process, Products, & Services	135	2	
	B. Results	550	B1. People Results	120	3	
			B2. Customer Results	230	1	
			B3. Society Results	90	6	
			B4. Key Results	110	4	

Table 3. The criterion weight analyses of the EFQM Excellence Model for the hotel industry.



Figure 5. The criterion weights of the EFQM Excellence Model for the hotel industry.

4.2. Discussion

In the original EFOM Excellence Model, Enablers and Results have 500 points each. In order to determine how many scores for each criterion are given in the EFOM Excellence Model for the hotel industry, this study uses the Fuzzy AHP to measure the score values of each criterion. This is done to test whether or not the official EFOM Excellence Model weights correspond with the areas that experts in the hotel industry perceive as equally important. A modified EFQM Excellent Model with specific scores for self-assessment in the hotel industry is then built. It is evident that the weights of the current EFOM Excellence Model are out of synchronicity with the perceived importance of the criteria in today's hotel business. Among the nine key indictors at the second level, the scores revealed by this study differ from those of the current EFQM Excellence Model. This proves that the scores used in the current EFQM Excellence Model must be adjusted by business type. Without such an adjustment, the assessment or evaluation becomes inaccurate, and the results are unreliable. In line with this discovery, practitioners in the hotel business should use this new EFQM Excellence Model for conducting self-assessment to discern its strengths, weaknesses, and areas in which improvements need to be made to reach better performance. A succinct depiction with respective scores is illustrated in a Radar diagram, as shown in Figure 6; it represents that the relative determinacy measures for each of the nine indicators are statistically more significant than that obtained with the previous version of the EFOM Excellence Model.

4.3. A multilevel structure analysis of the EFQM Excellence Model for the hotel industry

Based on the Fuzzy AHP, which is a fuzzy multi-expert judgement method, a modified EFQM Excellent Model viable for the hotel industry is developed. The scores structure in the modified EFQM Excellence Model is a three-level model, as shown in Figure 7. The results indicate that the modified EFQM Excellence Model has two key elements in Level 2 and nine criteria or indicators in Level 3. In Level 2, 'Results' is regarded as more important (550 points) than 'Enablers' (450 points). Results reveal that the overall allocation of weights between the Enablers and Results is not equal. The fundamental EFQM Excellence Model with criterion scores for self-assessment or performance evaluation in the hotel industry is thus established.



Figure 6. Radar diagram of the nine EFQM criteria in the hotel industry.



Figure 7. A multilevel EFQM Excellence Model for the hotel industry.

5. Conclusions and implications

This study first argues that the accuracy of the existing EFQM Excellence Model is questionable because its criterion scores demonstrate no difference among industries. Without giving different scores to different industries, the results of the assessment are disputable. For this reason, this study proposes a modified EFQM Excellence Model with new criterion scores for the hotel industry. In addition, unlike polls or surveys, any model should meet the following criteria. It should be (1) Available: any model or indicator data should be clear and easily accessible; (2) Understandable: indicators should be easily understood; (3) Credible: indicators should be supported by valid, reliable information in a scientifically defensible manner; (4) Relevant: indicators should reflect the true phenomena in management and activities; and (5) Integrative: indicators should demonstrate connection among the indicators. The modified EFOM Excellence Model developed by this study meets these criteria; it can be applied to evaluate hotel performance accurately anytime and anywhere. The primary objective of this study, which is to develop a modified EFOM Model for evaluators and policy-makers in the hotel industry, is hereby achieved. The analysis shows that the criterion scores are not at all in alignment with the current EFQM weights, for example, in the case of the hotel industry. In the hotel industry, the Results block is regarded as more important than the Enablers block; this suggests that the hotel industry must focus more on the Results criteria than on the Enablers criteria. Moreover, Customer Results is given the highest score, which suggests that the customer issue is still the core performance indicator in the hotel industry. It is evident from this study that the modified EFQM Excellence Model developed has made the following contributions to the hotel industry. First, self-assessment in the hotel industry is subject to a number of indicators, and this study highlights the main parts, given each indicator with new scores. Second, measurement of excellence is a difficult task; the modified EFQM Excellence Model with scores can make this work easier. Third, the nine indicators with scores developed by this study can be used as critical success drivers for accomplishing business excellence and quality recognition. Finally, the implications of this study are as follows: the application of the EFQM Excellence Model should consider the adjustment of assessment scores in accordance with the business type; to examine the managerial problems effectively in the hotel industry, the modified EFQM Excellence Model developed by this study is strongly recommended. This study has one limitation, related to the fact that the experts invited by this study are all from Taiwan; their judgement or way of thinking might differ from that of experts from other countries, which could cause deviation in the results. Future studies must, therefore, widen the scope of the study to include some cross-country comparison of such estimated weight structures. Further studies could present a set of sub-sub-indicators for the modified EFQM Excellence Model. Of course, any change or adjustment to this modified EFQM Excellence Model is recommended if it can bring more accurate and realistic results.

Disclosure statement

No potential conflict of interest was reported by the authors.

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