



INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES



Applying Multi-Criteria Decision Making Technique in Hospitality Quality Management System

Kit Yeng Sin, Mun Chong Sin

To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v9-i11/6511>

DOI: 10.6007/IJARBSS/v9-i11/6511

Received: 01 October 2019, **Revised:** 18 October 2019, **Accepted:** 30 October 2019

Published Online: 04 November 2019

In-Text Citation: (Sin & Sin, 2019)

To Cite this Article: Sin, K. Y., & Sin, M. C. (2019). Applying Multi-Criteria Decision Making Technique in Hospitality Quality Management System. *International Journal of Academic Research in Business and Social Sciences*, 9(11), 1–9.

Copyright: © 2019 The Author(s)

Published by Human Resource Management Academic Research Society (www.hrmars.com)

This article is published under the Creative Commons Attribution (CC BY 4.0) license. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this license may be seen at: <http://creativecommons.org/licenses/by/4.0/legalcode>

Vol. 9, No. 11, 2019, Pg. 1 - 9

<http://hrmars.com/index.php/pages/detail/IJARBSS>

JOURNAL HOMEPAGE

Full Terms & Conditions of access and use can be found at
<http://hrmars.com/index.php/pages/detail/publication-ethics>



INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES



Applying Multi-Criteria Decision Making Technique in Hospitality Quality Management System

Kit Yeng Sin

Universiti Malaysia Sarawak, Faculty of Economics and Business, 94300 Sarawak, Malaysia.

Email: sinkityeng8190@gmail.com

Mun Chong Sin

Universiti Teknologi Malaysia, Faculty of Education, 81310 Johor Bahru, Johor, Malaysia.

Email: simonsinmunchong@gmail.com

Abstract

This study evaluates the importance of quality management (QM) critical success factors (CSFs) within the context of Malaysian hotel firms. Primary criteria to evaluate QM CSFs were determined through literature survey and multi-criteria decision making (MCDM) technique assisted by Decision-Making Trial and Evaluation Laboratory (DEMATEL)-based analytical network process (ANP) (D-ANP). D-ANP is integrated to allow the calculation of importance level, weights of all dimensions and indicators, as well as significances. The findings demonstrated the way hotels can be evaluated and ranked, based on the relationships between and among the contexts and variables. The research findings will assist the policymakers (Ministry of Tourism) to formulate policies and data of QM best practices that will ensure the success of hotel firms.

Keywords: Quality Management, Critical Success Factors, Multi-Criteria Decision Making

Introduction

Malaysian Tourism Report Q2 2015 reported that Malaysia's tourism market has a solid base to grow simultaneously with the wider Asia Pacific Region. Being one of the 12 National Key Economic Areas (NKEAs), the tourism sector is one of the main contributors to Malaysia's economic status. Such contribution is not surprising as Malaysia is one of the top 10 tourism destination in the world (Malaysia Investment Development Authority, 2015), and the tourism sector's profit is expected to rise by 4.0% in 2003 and 4.6% pa between 2013 and 2022; MYR 90.7 billion in 2022 (World Travel & Tourism Council, 2012). Naturally, a high tourist number will affect hoteliers as they compete with each other for profits and competitive advantage. Effective implementation of marketing technique and of QM practices might enhance the quality of products and services delivered. Consequently, these hospitality institutions can stay relevant in the increasingly competitive field.

In the past five decades, firms had been adapting QM into their management system (Sousa & Voss, 2008). The management system was developed in Japan and was the products of Juran, Deming, Crosby, Feigenbaum, and Ishikawa. These quality gurus developed QM due to the rise of the automobile industry in Japan. Over time, QM started to be noticed as a

revolutionary management approach. It started to influence the national business system and was seen as a way to improve performance and management standard (Spencer, 1994).

In terms of its existence in literature, there is an adequate amount of study related to QM in service and manufacturing firms. Nevertheless, the number of studies specifically relating QM and service firms is low (Gustafsson, Nilsson & Johnson, 2003). It is worth noting that QM has been identified as the key in differentiating service products, and in building competitive advantage (Koc, 2006). Some studies assessed the role of QM through CSFs, but the surface understanding was due to the absence of a comprehensive list of QM CSFs. In addition, most studies on this matter focus on its success in developed countries instead of developing countries (Mensah, Copuroglu & Fening, 2012).

Multi-Criteria Decision Making (MCDM) is able to consider multiple criteria at the same time. This approach will assist decision making by classifying cases based on the characteristics and criteria present in limited and available cases (Tzeng & Huang, 2011). The MCDM method is capable of doing so as it rids dependence and feedback problem, and established a performance evaluation and relationship model (Chen, Hsu & Tzeng, 2011). MCDM has the potential to establish a deeper understanding of the hospitality industry by identifying sub-factors and their corresponding sub-factors that influence individuals' perspectives (Mensah et al., 2012). The successfulness of this approach was proven in creating marketing strategies (Chiu, Chen, Tzeng & Shyu, 2006), evaluating e-learning effectiveness (Tzeng, Chiang & Li, 2007), developing the competencies of global managers (Wu & Lee, 2007), enabling socially responsible investment (Tsai, Chou & Hsu, 2009), and assisted with cost evaluation in hotel industry (Tsai, Hsu, Chen, Lin & Chen, 2010).

Following these observations, this study presented a review of the available literature on QM, with particular focus on those discussing developing countries. The aim is to identify, evaluate, and prioritise the various QM CSFs in Malaysia hospitality industry. An integrated MCDM was used to evaluate the relationships among factors. This evaluation was carried out with the aid of Analytic Network Processes (ANP) and Decision Making Trial and Evaluation Laboratory (DEMATEL) approaches.

Review of the Literature

Different sets of CSFs that are pertinent to QM success mostly regard only developed countries, leaving developing countries without any common set of CSFs (Mensah et al., 2012). In the Spanish hotel industry, Claver-Cortes, Pereira-Moliner, Tari, and Molina-Azorin (2008) observed the existence of TQM factors such as training, environmental management, and information and communication technologies and information system (ICT/IS). The researcher assessed TQM-performance link using regression analysis. Meanwhile, a study constructed by Wang, Chen & Chen (2012) in a China environment assimilated the constructs of TQM established by Grandzol and Gershon (1998). The study discovered that hotels that adapted TQM methods paid attention to their customers, continuous improvement on their part, internal and external cooperation, leadership, employees' well-being, learning, and process management. This study assessed the relationship among total quality management, market orientation, and hotel performance by using Structural Equation Model and discriminate analysis.

In recent years, the MCDM and fuzzy method are increasingly used by academicians in their studies of hotel and hospitality industry. One of the studies that employ these

methodologies was assessing the relationship between tourism and gourmet business in Taiwan (Horng, Liu, Chou, Yin & Tsai, 2013). This study observed that human resource was most crucial in the tourism and gourmet business, and the least significant was market development. Another study that employed two fuzzy MCDM methods were carried recently, and the study aimed to assess CSFs in Iranian SME's hotel firms (Mardani, Jusoh, Bagheri & Kazemilari, 2015). They identified 16 CSFs and classified them into three perspectives; human perspective (customer focus, employee empowerment, employee fulfillment, employee involvement, and leadership), organisational perspective (continuous improvement, strategic planning, team working, organisational culture, organisational trust, and process management), and technological perspective (Statistical Process Control (SPC), quality control and reporting, benchmarking, ISO 9001, and Just In Time (JIT)). Three of these were selected to be used in this study and was incorporated into a proposed model for further investigation. Figure 1 demonstrates the entire framework, including dimensions and indicators.

Research Methodology

As aforementioned, this study incorporated the CSFs identified in Mardani, Jusoh, Bagheri & Kazemilari (2015) to develop a five-stage integrated Multi-Criteria Decision-Making (MCDM) model. The model was used to evaluate the dependence relationship of factors, assisted by the grey relational analysis, analytical network process (ANP), and Decision-Making Trial and Evaluation Laboratory (DEMATEL). Figure 1 shows the ANP model used to determine the importance of quality management critical success factors in Malaysia hospitality industry.

Firstly, QM CFs were selected based on literature review and the opinions of quality management experts. The experts were comprised of tourism industry academicians, QM academicians, hotel proprietors, quality auditor, tourism government officials and several others who were considered to be of authority of their respective field. These data helped to determine QM dimensions and indicators. Next, a grey relational analysis (GRA) was used to reduce the influence of sub-factors on the success of QM.

Then, the DEMATEL method was implemented to assess the relationship between the dimensions (main factors) and indicators (sub-factors). The same method was used to observe the interdependency and feedback among the factors. It should be noted that observing the relationship is pertinent to assess the influence of each element in the research model. The DEMATEL was used as it is more appropriate for real-world applications in MCDM situations compare to conventional methods (Hung, Chou & Tzeng, 2011). Moreover, DEMATEL is capable of identifying the level of interdependencies and of constructing a network relationship map (NRM). In short, employing DEMATEL ease the construction of the model in relation to the constructed NRM and the calculated level of interdependencies of elements.

The DEMATEL and ANP methods were integrated next. This approach was to construct DEMATEL-based ANP (D-ANP), which will allow the calculation of importance level, weights of all dimensions and indicators, and significances. Following all these steps, the most important factors for the success of Malaysia hospitality were determined. Hotels can then be evaluated and ranked.

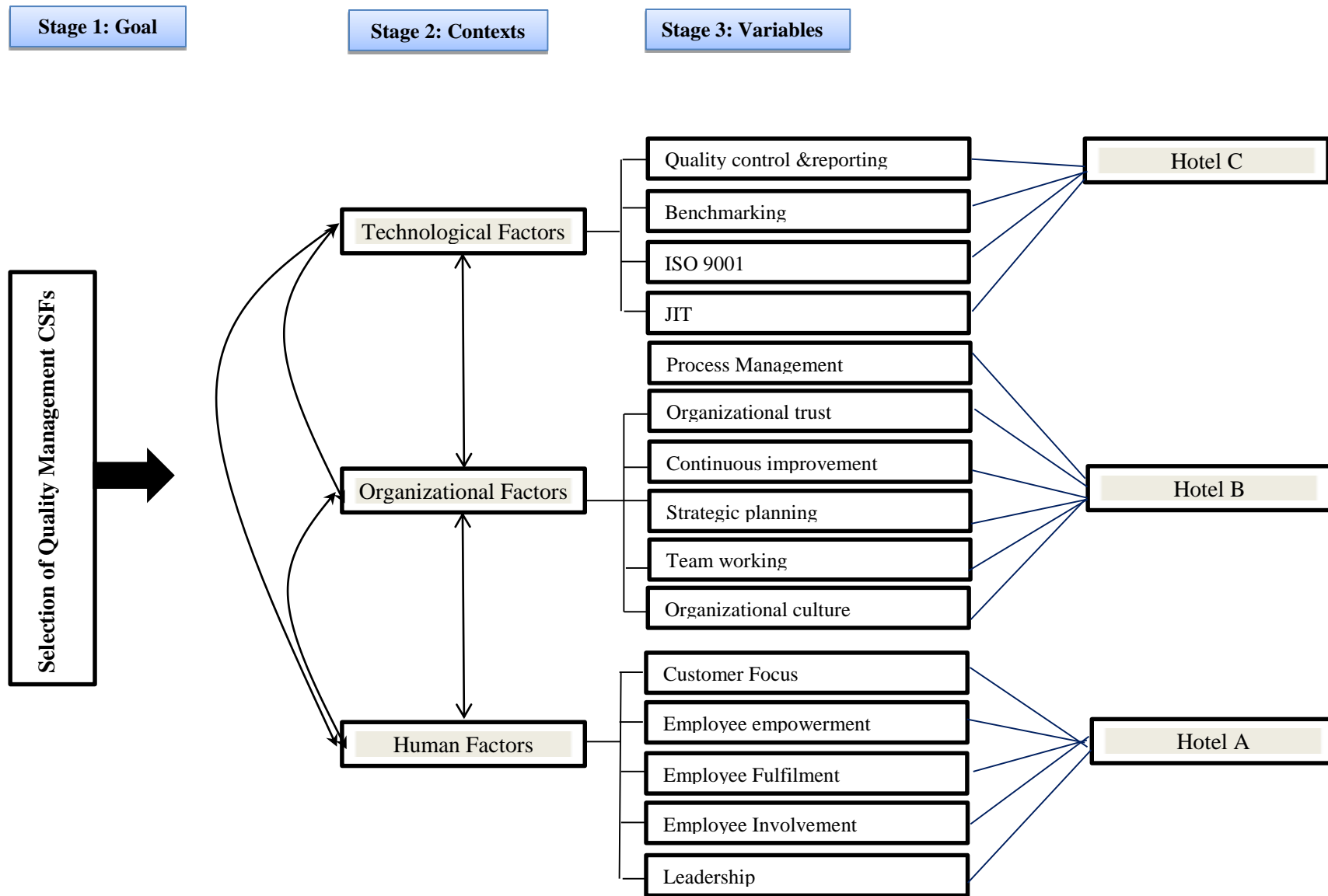


Figure 1. ANP model to determine importance of Quality Management Critical Success factors in Malaysia Hospitality Industry

Conclusion and Implications

An integrated Multi-Criteria Decision-Making (MCDM) model is important in combatting issues of selecting quality management critical success factors in the hospitality industry. The research findings will assist the policymakers (Ministry of Tourism) to formulate policies that require all hotels to undergo a quality audit using the integrated MCDM model. Consequently, practices of quality management in the Malaysia hospitality industry will be improved. All in all, using the model will equip practitioners with knowledge and data of best practices that will ensure the success of hotel firms.

To boot, this study outcome gave its real contextual contribution that helps the tourism or relevant hotel policy maker understood and acquired integration of QM and MCDM model as a part of an integrated business management. Accordingly, this proposed framework can be developed and recommended to the government's board for commendation, implementation and modification to assure that the QM strategies within hotel entities are addressed.

References

1. Chen, F. H., Hsu, T. S., Tzeng, G. H. (2011). A balanced scorecard approach to establish a performance evaluation and relationship model for hot spring hotels based on a hybrid MCDM model combining DEMATEL and ANP. *International Journal of Hospitality Management* 12/2011; 30(4):908-932.
2. Chiu, Y. J., Chen, H. C., Tzeng, G. H., & Shyu, J. Z. (2006). Marketing strategy based on customer behavior for the LCD-TV. *International Journal of Management and Decision Making*, 7(2/3), 143–165.
3. Claver-Cortes, E., Pereira-Moliner, J., Tari, J.J. and Molina-Azorin, J. F. (2008). 'TQM, managerial factors and performance in the Spanish hotel industry', *Industrial Management and Data Systems*, Vol. 108, No. 2, pp.228–244.
4. Grandzol, J. R., Gershon, M. (1998). A survey instrument for standardizing TQM modeling research. *International Journal of Quality Science* 3 (1), 80–105.
5. Gustafsson, A., Nilsson, L., & Johnson, M. D. (2003). The role of quality practices in service organizations. *International Journal of Service Industry Management*, 14(2), 232-244.
6. Horng, J. S., Liu, C. H., Chou, S. F., Yin, Y. S., & Tsai, C. Y. (2013). Developing a Novel Hybrid Model for Industrial Environment Analysis: A Study of the Gourmet and Tourism Industry in Taiwan. *Asia Pacific Journal of Tourism Research*(ahead-of-print), 1-26.
7. Hung, Y. H., Chou, S. C. T., Tzeng, G. H. (2011). Knowledge management adoption and assessment for SMEs by a novel MCDM approach. *Dec. Support Syst.* 51(2), 270–291.
8. Koc, E. (2006). Total quality management and business excellence in services: The implications of all-inclusive pricing system on internal and external customer satisfaction in the Turkish tourism market. *Total Quality Management & Business Excellence*, 17(7), 857-877.
9. Malaysia Investment Development Authority, 2015. Malaysia Investment Development Authority Official Website [Online]. (<http://www.mida.gov.my/home/>), 2015 (accessed 22.06.15).

10. Mardani, A., Jusoh, A. B., Bagheri, M. M. & Kazemilari, M. (2015). A combined hybrid fuzzy multiple criteria decision-making approach to evaluating of QM critical success factors in SME's Hotels Firms. Elsevier Procedia - Social and Behavioral Sciences Vol. 172(2015) 786-793.
11. Mensah, J. O., Copuroglu, G., & Fening, F. A. (2012). Total Quality Management in Ghana: Critical Success Factors and Model for Implementation of a Quality Revolution. *Journal of African Business*, 13(2), 123-133.
12. Sousa, R., & Voss, C. A. (2008). Contingency research in operations management practices. *Journal of Operations Management*, 26(6), 697-713.
13. Spencer, B. A. (1994). Models of organization and total quality management: a comparison and critical evaluation. *Academy of Management Review*, 19(3), 446-471.
14. Tsai, W. H., Chou, W. C., Hsu, W. (2009). The sustainability balanced scorecard as a framework for selecting socially responsible investment: an effective MCDM model. *Journal of the Operational Research Society* 60 (10), 1396–1410.
15. Tsai, W. H., Hsu, J. L., Chen, C. H., Lin, W. R., Chen, S. P. (2010). An integrated approach for selecting corporate social responsibility programs and costs evaluation in the international tourist hotel. *International Journal of Hospitality Management* 29 (3), 385–396.
16. Tzeng, G. H., Chiang, C. H., Li, C. W. (2007). Evaluating intertwined effects in e-learning programs: a novel hybrid MCDM model based on factor analysis and DEMATEL. *Expert Systems with Applications* 32 (4), 1028–1044.
17. Tzeng, G. H., & Huang, J. J. (2011). *Multiple attribute decision making: Methods and applications*. Taylor & Francis.
18. Wang, C. H., Chen, K. Y., & Chen, S. C. (2012). Total quality management, market orientation and hotel performance: the moderating effects of external environmental factors. *International Journal of Hospitality Management*, 31(1), 119-129.
19. World Travel & Tourism Council. (2012). *Travel and Tourism Economic Impact 2012*. [Online] Available:http://www.wttc.org/site_media/uploads/downloads/world2012.pdf. [14January 2013]
20. Wu, W. W., Lee, Y. T. (2007). Developing global managers' competencies using the fuzzy DEMATEL method. *Expert Systems with Applications* 32 (2), 499– 507.