AAMC 2019
The 13th Asian Academy of Management International Conference 2019

ANALYSIS OF EMPLOYEE EFFICIENCY IN THE HOTEL INDUSTRY BASED ON DEA MODEL

Intan Nur Fatin Abdul Rani (a), Nik Hazimah Nik Mat (b)*
*Corresponding author

(a) (Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, Malaysia,
p3269@pps.umt.edu.my
(b) Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, Malaysia,
nikhazimah@umt.edu.my

Abstract

With increasing number of tourists over the years, Malaysian hotel industry has demonstrated a potential of massive growth in the future. This can be realized by having an efficient operation, which enable hotels to achieve maximum productivity with the minimum use of resources. In doing so, employees are an important asset to be considered for developing the operational strategy. Employee efficiency of the hotel industry is measured using Data Envelopment Analysis (DEA) modelling for this study. The analysis is conducted based on HRM practices as an input and employee commitment as the output. The study involved 62 employees from 12 different island hotels in Malaysia. Form the results, it is showed that only few hotels have experienced effective HRM practices which enable them to secure the commitments of their employees. Other hotels were found to be inefficient as they failed to execute effective HRM practices that resulted with low commitment among their employees. The implication of the results is discussed in relation to the identification of a benchmark for the industry that crucial in sustaining the tourism industry and help the business players to stay competent in the market regardless of the situation.

Keywords: Controlling function, employee efficiency, data envelopment analysis, hotel industry, Malaysia.

1. Introduction

Controlling is the last element of the management functions being done after the outcomes were produced. Controlling is crucial for organizations to analyze their achievement with the current operational strategy and make corrective actions where necessary (Robbins & Coulter, 2018). Efficiency is a key activity under controlling function in order to make changes of the organizational current strategy and improve the outcomes. Achieving organizational efficiency is highly depending on the performance of an individual employee. Committed employees will highly contribute for the accomplishment of the organizational goals (Veld & Alfes, 2017). According to Mustafeed et al. (2016), efficiency in a hotel can be described as the achievement of the most efficient performance. Efficiency in hotel performance can be seen in many different aspects. In these situations of island hotel where they are mostly located in an isolated place, employee satisfaction should receive due attention so that they will remain efficient and are satisfied while performing their tasks as they are a valuable organizational asset. In the tourism industry, the study of hotel efficiency has been reported to increase due to the need for the industry to develop and contribute to the income of many countries (Ashrafi et al., 2013). Tourism is considered to be an industry with a high relative importance by many countries throughout the world.

The tourism industry has contributed to the national income for many countries in the world including Malaysia. Out of 184 countries worldwide, Malaysia is currently ranks 26th with regards to the substantial impact of travel and tourism industry contribution to its national output (Giap et al., 2016). In Malaysia, the contribution of this industry not only focuses on economic development but included socio and environmental achievement. This shows the significance contribution of this industry to the Malaysian economy especially in reacting to the economic uncertainties that have affected the business environment. The tourism industry is projected to evolve as the demand from tourists all over the world has been reported to increase.

Human resource management (HRM) is the best tool to keep employees performing in line with an organization's objectives and achieves better performance (Shah & Beh, 2016; Khan, 2010). Effective HR practices are necessary for organization to improve employees' performance. Without a set of effective HRM practices, employee may be unable to perform their tasks accordingly as no proper guidelines available for them to do so (Guest, 2017). Company's vision should have been effectively communicated to all level of employees to ensure they are doing the right things for the accomplishment of the organizational goals (Zapalska et al., 2015).

1.1. HRM and organization

HRM that communicate best practices to employees can positively effects on their performance both directly and indirectly, among which includes organizational commitment and work engagement (Guest, 2017). Management should institute measures to provide the best HRM practices. A competent and committed employee is the backbone in creating organization prosperity and without him/her an organization was not able to conduct their business in a good manner and generate stable income. Organization can end up losing many current clients and future business if their employees leave the organization caused by incompetent management practices (Ghosh et al., 2013). So, it is obvious that

employee is an important tool that a hotel can use to boost its overall efficiency by implementing the best HRM practices to remain efficient with respect to their present and future challenges.

In conjunction with challenges that the hotel sector faces in reacting to changes in the business environment, Human Resource Management (HRM) addresses the retention of employees to remain competitive via necessary policies and practices. These could be implemented through extensive recruitment and selection; compensation and rewards; performance appraisal; and also training and development (Dessler, 2007). All of these practices not only benefit an employee's well-being while working with the organization but also benefit the organization itself. Many researchers have indicated that HR is a basic asset that supports an organization and helps it to stay aggressive in the market (Lloyed & Leslie, 2000; Marchington & Wilkinson, 2008).

Organization's competitive advantage can remain stable and being intensified if the HRM practices are being used appropriately. This can help in influencing many important outcomes even in small and medium-sized companies (Sheehan, 2014). In addition, Voorde et al. (2012) revealed that effective HRM will result in employee happiness and build a mutually beneficial relationship between company and employee. In this regard, improving employee efficiency by utilizing best HRM practices can be very useful to the hotel industry sector and vital in terms of contributing to Malaysia's national income. For this reason, this study aim to determine HRM practices that can lead to highly efficient hotel employees and, in turn, lead to high performance in hotel operations.

1.2. Underpinning theories

This study uses signaling theory because this theory is useful in describing the behaviour of two different entities (individuals and organizations) that have different information to deliver (Taj, 2016). Basically, in signaling theory, the sender have to choose on how to transmit the information that they want to deliver. A receiver then must decide how to clarify the signal that they have received (Connelly et al., 2011). In this research, the organization will be the sender and employees are the receivers, who receive, interpret, and understand the information sent. In this process, understanding the effect of the order in which the employees have received the signal because signals may be subject to different controls throughout the signaling process. This is where receiver attention is ultimately important for the signaling process to be successful (Taj, 2016). Applying this theory to the context of this paper, if an employee makes significant improvement in his efficiency by utilizing best HRM practices, then that employee has successfully interpreted the signals the manager has sent.

Apart from sinaling theory, resource-based view (RBV) theory also was used as the base for this study. One early researcher who recognized the importance of resources as one of the firm competitive edge was Penrose back in 1959 who argued that an organization's internal and external development was based on how well the resources of that organization were utilized (Newbert, 2007). It is argued that by utilizing organization resources that are hard to find, precious and pertinent, an organization may gain its competitive advantage (Panda & Reddy, 2016). Boudreau and Ramstad (2007) said that, "Whether it is called "people," "labour," "intellectual capital," "human capital," "human resources," "talent," or some other term, the resource that lies within employees and how they are organized is increasingly recognized as critical to strategic success and competitive advantage" (p. 4).

2.   Problem Statement

Having committed employee can facilitate organization in combating difficulties in occurrence of business adversity. However, the perspective from the employee side was always seem to be typically neglected and does not count by the HRM studies (Vivares-Vergara et al., 2016). Employee experiences with HRM implementation are incredibly vital and they should have been engaged in their work to boost the general performance of an organization and uphold its value (Taneja et al., 2015). It is found that managers often neglect employees' voice in their business set up (Taneja et al., 2015). While managers always overlook on employee insights in making decision, this present study intends to fill the gap by evaluating the efficiency levels among hotel employees.

The hotel business industry is a key sector contributing to the Malaysian GDP. To date, the study on measuring hotels operation efficiency remains under researched (Yen & Othman, 2011), adding on no model to specifically addressed the issue of hotel efficiency in Malaysia. As the hotel industry in Malaysia has a large potential to develop, this current analysis aims to fill this gap in order to help the hotel operators to achieve maximum efficiency. In order to adapt with the complex business surroundings, hoteliers should find ways to strengthen their hotel's efficiency and productivity to make sure its survival. Achieving efficiency is very crucial because it is what that keeps the hotel businesses on the proper track and ensures the considerable use of the organization's available resources.

Hotel business is currently recognized as a climate-sensitive economic sector (Burton et al., 2009). Island hotels in Asian country specifically ought to adapt to the changes that happened within the weather every single year caused by the seasonal monsoon that ranging about three to four months. They are terribly prone to numerous impacts brought by the seasonal monsoon that effected their business operations (David, 2018). There were tons of studies that emphasis on weather changes impact on the behavior of tourist but less focus if paid on how it is impacting the tourism businesses especially on the perception of hotel industry employee.

3.   Research Questions

Accordingly, two questions addressed for this research are as follows:
▪   What is the current efficiency level of island hotels employee?
▪   How can hotel operators improve employee efficiency level?

4.   Purpose of the Study

The intention of this study been conducted are as follows:
▪   To investigate the efficiency level of the island hotels employees.
▪   To provide a benchmark for hotel operators in improving employee efficiency level.

5.   Research Methods

As a nonparametric mathematical programming methodology (Shirouyehzad et al., 2012), DEA has been used particularly to measure technical efficiency (Vincova, 2005). While some limitations of the other

techniques are debated for their ability to predict the correlation between one input with another output, using more than one input and output DEA on a better side allows researcher to analyse the efficiency level between decision-making units (DMUs) (Tavakoli & Shirouyezhad, 2013). Further, the analysis did not need any assumptions such as how the observation is located below efficiency boundary (Martic et al., 2009). DEA has been widely used for performance and productivity benchmarking in the hotel industry. For example, Wu et al. (2013) utilized DEA modelling in their study on the hotel industry in Taiwan. They had put forward a benchmarking framework to evaluate the efficiency and effectiveness of 80 hotels with divergent business strategies for the hotel market. They found that a benchmarking that is used in DEA modelling could add more useful information to facilitate hotel managers in increasing efficiency.

To measure efficiency the level among employees from selected island hotels in Malaysia, this study employed the DEA as the approach. As shown in Figure 1, the DEA framework for this study involved HRM practices as the input with employee commitment as the output. Based on this framework, attempt is made to provide insights on which HRM practices contribute to the efficiency level of the employee. At the same time, DEA approach also can help the researcher in identifying HRM practices which are not being executed effectively in the hotel that lead to inefficient employees.
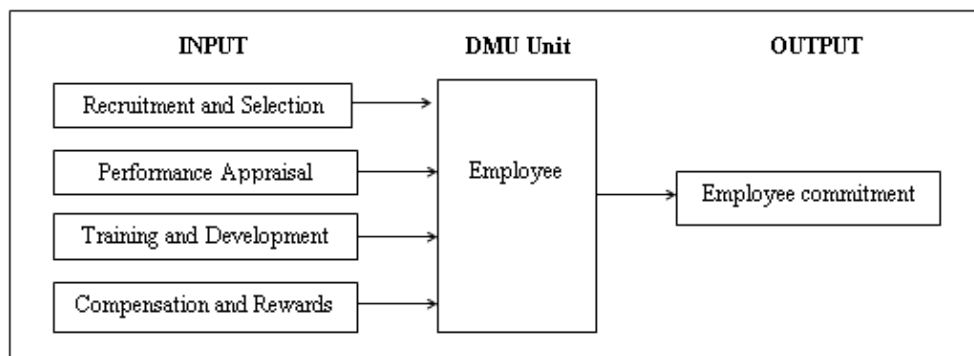

Figure 01. DEA Framework for Achieving Employee Efficiency through HRM Practices

A survey was conducted among employees of the island hotels. Four HRM practices have been chosen for the input: recruitment and selection, performance appraisal, training and development, and compensation and rewards. Output is measured through employee commitment. Questions for the survey were organized into three sections. Section 1 consists of respondent's demographic background, section 2 comprises of questions related to HRM practices, and the last section is for employee commitment. A total of 104 surveys were collected from 12 different island hotels around Terengganu, Malaysia with 62 surveys were usable. 62 respondents were enough for the DEA model based on the rule of thumb {3 (m+s)} (Ozcan, 2014). The 'm' refers to input while 's' refers to output. In this study, it only needs minimum of 15 surveys in order to run the data analysis as the rule of thumb {3 (4+1)} is applied. The complete data were then analysed using DEA modelling to clarify the employee efficiency in the hotel industry.

6. Findings

Table 01. Results of DEA Modelling on Efficiency Score

Hotels	DMU	Score	Rank	Hotels	DMU	Score	Rank
Hotel A	1	0.7027	45	Hotel H	36	0.81818	19
Hotel B	2	0.79608	24	Hotel I	37	0.79297	25
	3	0.81395	22		38	0.78988	26
	4	0.58103	59		39	0.82031	18
	5	0.88189	10		40	0.82353	17
	6	0.86111	13		41	0.65882	50
Hotel C	7	0.82569	15		**42**	1	1
	8	0.7027	45		**43**	1	1
	9	0.48649	62		44	0.72973	38
	10	0.54054	61	Hotel J	45	0.6537	51
	11	0.62162	55		46	0.70588	42
Hotel D	**12**	1	1		47	0.78378	30
	13	0.78988	26		48	0.81712	20
	14	0.70817	40		49	0.76018	36
	15	0.61111	57		50	0.76364	35
	16	0.81395	22		51	0.77064	31
	17	1	1	Hotel K	52	0.78988	26
	18	1	1		53	0.65116	52
Hotel E	19	0.91667	9		54	0.86878	12
	20	0.82569	15		55	0.7027	45
	21	0.76863	32		56	0.70543	44
	22	0.88073	11		57	0.65116	52
	23	0.76863	32	Hotel L	58	0.85321	14
	24	0.59729	58		59	0.81448	21
	25	0.94071	8		60	0.62162	55
Hotel F	26	0.78733	29		61	0.56757	60
	27	0.66055	49		62	0.64865	54
	28	0.70817	40				
	29	0.74312	37				
Hotel G	30	0.67829	48				
	31	0.71233	39				
	32	0.76563	34				
	33	0.70588	42				
	34	0.98438	7				
	35	0.99213	6				

Table 1 shows the results of the efficiency score and rank of the employees from the 12 different island hotels in Malaysia. Due to the incomplete survey response, only 1 survey data were usable from the Hotel A and H. In this study, only DMUs with the score of 1 were considered efficient while DMUs that scored less than 1 are inefficient (Poldrugovac et al., 2016). Based on the results, five DMUs were efficient demonstrating best practices have been implemented. They are also considered as employees who were successfully interpreting the right signal sent from the upper management.

Table 02. Score of Island Hotel Employee with the Reference Details through DEA

Inefficient DMU	Hotel	Reference DMU	Benchmark Hotel
1, 8, 9, 10, 11, 44, 47, 49, 50, 55, 61, 62	A, C, I, J, K, L	17	
6, 15, 19	B, D, E	18	
2, 3, 4, 5, 7, 13, 14, 16, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 45, 46, 48, 51, 52, 53, 54, 56, 57, 58, 59, 60,	B, D, E, F, G, H, I, J, K, L	17, 18	D

DEA model is known as a useful tool to do benchmarking. Table 2 provides information on the DMUs that were efficient and can be a benchmark for the other DMUs. Out of five efficient DMUs, this study found that DMU 17 and 18 from Hotel D are identified as good benchmarks for the other DMUs. The result suggests that for the other hotels to have efficient employees like Hotel D, they can refer to the HRM practices implementation of the benchmark hotel. This is to ensure that all HRM practices are effectively executed and could influence the commitment of the employees to their hotels.

Table 03. Score of Island Hotel Employee with the Reference Details through DEA

Input	Recruitment	Training	Appraisal	Rewards
Average Score	6.4584	4.447	1.7742	1.5047

Slack analysis through DEA demonstrated that none of the efficient hotel employees had any slack and only those employees that are identified as inefficient had a slack value. The higher slack value demonstrates the more improvement needed. The result as shown in the Table 3 revealed that recruitment and selection practices were not well executed by the hotels and did not satisfy employee enough to create commitment as the slack value is the highest (6.4584). In contrast, the implementation of rewards is found to be effective where the score is lowest among all practices (1.5047). The slack average score provide good information for hotel organization to analyse their HRM practices implementation in satisfying their employee and increase their commitment. Result of slack average demonstrate that the hotels should have practice a good recruitment and selection such as recruiting skilful internal employee in order to make employee fell appreciated and satisfied. This recommendation is also supported by other studies that said it can lead to a long term organizational success (Chungyalpa & Karishma, 2016; Devaro, 2016).

Of the 62 employees surveyed, 57 employees believed that the HRM practices were ineffective in making them feel obligated to their work and to serve their company. For employees to feel satisfied, they need to be motivated and this task specifically relies on the HRM department (Lee & Chen, 2013; Guest, 2017). Through an effective set of HRM practices such as a fair reward system and a proper training program, the belief is that employee commitment to an organization may increase dramatically (Gul, 2015). Conversely, an organization with ineffective HRM practices will definitely lead to a lack of employee commitment and that employee will leave the company. As today's business environment has increasingly become more competitive, findings of this study supported the need for an organization to be driven in implementing HRM practices particularly for service-oriented organizations like the hotel industry (Shah & Beh, 2016).

7. Conclusion

This study aims to analyse employee efficiency in island hotels in Malaysia through DEA modelling. Results suggest for the hotels to implement an effective HRM practices that suit with the characteristics of the island hotels which could highly influence employees' commitment. While majority of respondents involved in the study noted their dissatisfaction with the current HRM practices implementation, this demonstrates the ineffectiveness of the policies to influence employee commitment. This result provides important implications as it could be one of the justification of the high turnover among employees in the hotel industry. Therefore, a benchmark hotel identified in the study could be a good source of reference for the other hotels that are facing with the problem with employees' commitment. Moreover, using the information lay out by the slack average score, further analysis can be done through DEA modelling. Based on the score, hotels are able to identify current HRM practices that lead to problem of employee commitment. This study provides insights for the hotel management to better formulate their HRM practices implementation to cater their contextual situations. Future studies could extend the analysis of employee efficiency by focusing more on the individual voices of employees to fill the gap of employee participation in understanding the linkage of HRM-performance in the Malaysian context).

Acknowledgments

References

Ashrafi, A., Seow, H.-V., Lee, L. S., & Lee, C. G. (2013). The efficiency of the hotel industry in Singapore. *Tourism Management, 37,* 31-34.

Boudreau, J.W., & Ramstad, P. M. (2007). *Beyond HR: The new science of human capital.* Harvard Business School Press.

Burton, I., Ebi, K. L., & McGregor, G. (2009). Biometeorology for adaptation to climate variability and change. In K.L. Ebi, I. Burton, & G. McGregor (Eds.), *Biometeorology for adaptation to climate variability and change* (pp. 1-5). Springer.

Chungyalpa, W., & Karishma, T. (2016). Best practices and emerging trends in recruitment and selection. *Journal of Entrepreneur and Organization Management, 5*(2), 173-178.

Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signaling theory: A review and assessment. *Journal of Management, 37*(1), 39-67.

David, A. (2018, Oct 22). Terengganu resorts brace for monsoon season. https://www.nst.com.my/news/nation/2018/10/423569/terengganu-resorts-brace-for-monsoon-season

Dessler, G. (2007). *Human resource management* (11th ed.). Prentice Hall.

Devaro, J. (2016). Internal hiring or external recruitment? The efficacy of internal or external hiring hinges on other policies that a firm uses simultaneously. *IZA World of Labor, 237,* 1-10.

Ghosh, P., Satyawadi, R., Prasad, J. J., & Shadman, M. (2013). Who stays with you? Factors predicting employees' intention to stay. *International Journal of Organizational Analysis, 21*(3), 288-312.

Giap, T. K., Gopalan, S., & Ye, Y. (2016). Drivers of growth in the travel and tourism industry in Malaysia: *A Geweke causality analysis. Economies, 4*(3), 1-15.

Guest, D. E. (2017). Human resource management and employee well-being: Towards a new analytic framework. *Human Resource Management Journal, 27*(1), 22-38.

Gul, Z. (2015). Impact of employee commitment on organizational development. *FWU Journal of Social Sciences, 9*(2), 117-124.

Khan, M. A. (2010). Effects of human resource management practices on organizational performance–An empirical study of oil and gas industry in Pakistan. *European Journal of Economics, Finance and Administrative Sciences, 24*(1), 157-175.

Lee, C. C., & Chen, C. J. (2013). The relationship between employee commitment and job attitude and its effect on service quality in the tourism industry. *American Journal of Industrial and Business Management, 1*(3), 196-208.

Lloyed, L. B., & Leslie, R. (2000). *Human resource management* (6th ed.). McGraw-Hill.

Marchington, M., & Wilkinson, A. (2008). H*uman resource management at work: People management and development* (4th ed.). CIPD.

Martic, M., Novakovic, M., & Baggia, A. (2009). Data envelopment analysis-Basic models and their utilization. *Organizacija, 42*(2), 37-43.

Mustafeed, Z., Laurent, B., & Tan, V. T. (2016). Does managerial efficiency relate to customer satisfaction? The case of Parisian boutique hotels. *International Journal of Culture, Tourism and Hospitality Research, 10*(4), 455-470.

Newbert, S. L. (2007). Empirical research on the Resource-Based View of the firm: An assessment and suggestions for future research. *Strategic Management Journal, 28*(1), 121-146.

Ozcan, Y. A. (2014). Performance measurement using data envelopment analysis (DEA). In *Health Care Benchmarking and Performance Evaluation* (pp. 15-47). Springer.

Panda, D., & Reddy, S. (2016). Resource Based View of internationalization: Evidence from Indian commercial banks. *Journal of Asia Business Studies, 10*(1), 41-60.

Poldrugovac, K., Tekavcic, M., & Jankovic, S. (2016). Efficiency in the hotel industry: An empirical examination of the most influential factors. *Economic Research-Ekonomska Istraživanja, 29*(1), 583-597.

Robbins, S. P., & Coulter, M. (2018). *Management* (14th ed.). Pearson Education Limited.

Shah, S. H., & Beh, L. S. (2016). The impact of motivation enhancing practices and mediating role of talent engagement on turnover intentions: Evidence from Malaysia. I*nternational Review of Management and Marketing, 6*(4), 823-835.

Sheehan, M. (2014). Human resource management and performance: Evidence from Small and Medium-Sized Firms. *International Small Business Journal, 32*(5), 545–570.

Shirouyehzad, H., Lotfi, F. H., Aryanezhad, M. B., & Dabestani, R. (2012). A data envelopment analysis approach for measuring the efficiency of employees: A case study. *South African Journal of Industrial Engineering, 23*(1), 191-201.

Taj, S. A. (2016). Application of signaling theory in management research: Addressing major gaps in theory. *European Management Journal, 34*(1), 338-348.

Taneja, S., Sewell, S. S., & Odom, R. Y. (2015). A culture of employee engagement: A strategic perspective for global managers. *Journal of Business Strategy, 36*(3), 46-56.

Tavakoli, M. M., & Shirouyezhad, H. (2013). Application of PCA/DEA method to evaluate the performance of human capital management: A case study. *Journal of Data Envelopment Analysis and Decision Science, 1,* 1-20.

Veld, M., & Alfes, K. (2017). HRM, climate and employee well-being: comparing an optimistic and critical perspective. *The International Journal of Human Resource Management, 28*(16), 2299-2318.

Vincova, K. (2005). Using DEA models to measure efficiency. *BIATEC, 13,* 24-28.

Vivares-Vergara, J. A., Sarache-Castro, W. A., & Naranjo-Valencia, J. C. (2016). Impact of human resource management on performance in competitive priorities. *International Journal of Operations & Production Management, 36*(2), 114-134.

Voorde, K. V., Paauwe, J., & Veldhoven, M. V. (2012). Employee well-being and the HRM–organizational performance relationship: A review of quantitative studies. *International Journal of Management Reviews, 14,* 391-407.

Wu, W. W., Lan, L. W., & Lee, Y. T. (2013). Benchmarking hotel industry in a multi-period context with DEA approaches: A case study. Benchmarking: *An International Journal, 20*(2), 152-168.

Yen, F. L., & Othman, M. (2011). Data envelopment analysis to measure efficiency of hotels in Malaysia. *SEGi Review, 4,* 25–36.

Zapalska, A. M., Brozik, D., & Zieser, N. (2015). Factors affecting success of small business enterprises in the Polish tourism industry. *Original Scientific Paper, 63*(3), 365-381.