

The effect of benchmarking reasons on benchmarking success: An empirical study on public universities

Abdulaziz D. Alhammadi^{a*} and Sura I. Alayed^b

^aVice dean of the Common First Year, Saudi Electronic University, Riyadh, Saudi Arabia

^bFaculty of Business Studies, Arab Open University, Riyadh, Saudi Arabia

ABSTRACT

Article history:

Received October 12, 2021

Received in revised format

October 30, 2021

Accepted January 2 2022

Available online

January 2 2022

Keywords:

Benchmarking reasons

Benchmarking success

Public universities

The aim of this study is to explore benchmarking reasons and their effects on benchmarking success from the perspectives of university managers in different management levels. Six reasons were examined for their role in benchmarking success. These reasons are top management support, university internal assessment, employee participation, benchmarking benefits, benchmarking competitor, and benchmarking partner. Data were gathered by a questionnaire distributed to managers from all levels in public universities. The questionnaire was developed based on related works on benchmarking. Two hundred questionnaires were distributed to the sample members and 167 questionnaires were returned with a response rate of 83.5%. The results indicated university internal assessment is the most influential reason for benchmarking success, followed by benchmarking benefits, benchmarking partner, top management support, and finally, employee participation. It was found that benchmarking competitors had no effect on benchmarking success. Therefore, universities are called for considering such reasons when heading for benchmarking. Researchers also are requested to validate such findings and to explore more reasons for benchmarking success.

© 2022 Growing Science Ltd. All rights reserved.

1. Introduction

To cope with the challenges such as competitiveness and technological advancements and global standardization, organizations seek to improve their products, services and processes to achieve numerous benefits such as gaining an excellent global position, providing customers with new values, enriching their people opportunities, improving their performance and achieving efficiency and effectiveness. One of the most effective methods by which organizations could use to realize such objectives is benchmarking. Generally, benchmarking can be divided into two types, which are internal and external benchmarking. The internal one refers to a comparison within the same organization, while the external one represents a comparison with other organizations (Emilia et al., 2020; Brah et al., 2000; Nazarko et al., 2009). Apart from benchmarking type, such a method is based on comparisons conducted between departments, divisions or organizations (Vlăsceanu et al., 2004). In higher education institutions, the aim of benchmarking is to achieve numerous benefits such as enhancing the competitive position of the institutions (Kuźmicz, 2015) and can be applied on several aspects like quality improvement (Gichinga & Mukulu, 2015). Universities proceeding to benchmarking should be aware of the factors affecting the successful implementation of benchmarking. Some factors cited in the literature for both companies and universities include university top management support, internal assessment, employee participation, customer orientation, benchmarking limitations, quality, as well as benchmarking benefits (Brah et al., 2000; Krumova, 2017; Lee et al., 2006). Four of these factors were selected for the current study, which are top management support, benchmarking benefits, employee participation, and internal assessment. To contribute to the literature on benchmarking success in universities, two factors were added, which were competitor-assisted benchmarking and partner-led benchmarking. Hence, the aim of this study is to explore the effect of these reasons of benchmarking-on-benchmarking success.

* Corresponding author

E-mail address: s.alayed@arabou.edu.sa (Sura I. Alayed)

The remainder of the paper is structured as follows. The next section presents a review of the literature on benchmarking definition, types, and benefits and demonstrates the logic behind hypotheses development in terms of both internal and external benchmarking. Section 3 illustrates the methodology of the study through clarifying the sample of the study and data collection, research model, measures, in addition to reliability and validity tests. Section 4 shows hypotheses testing and discusses the results, followed by section 5 presents the conclusion reached by the study. Subsequent sections underline implications, limitations, and future research directions.

2. Literature review and hypotheses development

2.1 Benchmarking definition, types and benefits

Benchmarking was introduced first in the USA in the 1990s (Tasopoulou & Tsiotras, 2017). It is a continuous process of comparing functions and operations of one organization with those of another organization to get an external standard that can be used to evaluate quality and cost of internal processes and to explore opportunities for enhancement (Alstete, 1995). That is, an organization is compared to a reference one (Emilia et al., 2020). Jackson and Lund (2000, cited in Meek & van der Lee, 2005) defined benchmarking as a learning process utilized by organizations to explore their strengths and weaknesses through comparing their products, services, or activities with other organizations. According to Kumar et al. (2006), benchmarking refers to the adaptation of good practices used in other organizations by an organization in order to elevate its performance. In UNESCO terms (Vlăsceanu et al., 2004), benchmarking refers to a method of collecting data to conduct comparisons among organizations in terms of their performance or programs in order to identify problems, exploring strength areas and adopting best practices. In terms of its types, Brah et al. (2000) mentioned four types of benchmarking, which are internal, functional, competitive, and generic benchmarking. For them, internal benchmarking is a comparison between two divisions in the same organization, while functional benchmarking represents a comparison between the organization with another competitor or with a group of its competitors. Functional benchmarking is related to a comparison with non-competitors who have different functional activities. Finally, the authors indicated that the generic type of benchmarking is based on a global organization. Nazarko et al. (2009) divided benchmarking into two types: subjective benchmarking and objective benchmarking. The first one encompasses both internal and external benchmarking. Internal benchmarking refers to the process of comparing departments (enterprise benchmarking) or within the group of the same company (corporation benchmarking). External benchmarking is a comparison of one organization with its competitors (competition benchmarking), with other organizations in a similar branch (branch benchmarking), or with other organizations from different branches (branch-independent benchmarking). Objectively, the authors conceptualized benchmarking as a process of comparing products (product benchmarking), processes (process benchmarking), structures (organizational benchmarking), and strategic actions (strategy benchmarking). According to, there are four types of benchmarking, which are internal, functional, competitive, and generic benchmarking. Benchmarking is the most important tool for organizations assessment and improvement (Tasopoulou & Tsiotras, 2017). There are several benefits of using benchmarking in organizations. These benefits could be categorized into direct benefits such as learning from others, improving organizational practices, and indirect benefits like gaining competitive advantage, boosting client satisfaction, and developing management skills (Nazarko et al., 2009). Additionally, organizations could get the better of resistance to change via benchmarking (Alstete, 1995). Brah et al. (2000) added some benefits of benchmarking such as enhancing response time for customers, reducing the costs of operations, strengthening employee commitment to continuous improvement, increased product innovation, customer loyalty, enhanced decision-making processes, as well as improving the ability of setting achievable goals. Furthermore, best practices of doing organizational activities and operations could be identified through benchmarking (Selhofer & Mayringer, 2001; Amit & Zott, 2012). In higher education, benchmarking is applied to numerous areas such as quality improvement (Gichinga & Mukulu, 2015) and technology cooperation (Geisler, 2003).

2.2 Benchmarking reasons

In order to understand the process of benchmarking, organizations are required to be aware of the factors affecting the success of benchmarking. A review of benchmarking literature revealed that the success of benchmarking initiatives in higher education institutions is significantly influenced by some factors such as top management support, internal assessment, employee participation, benchmarking benefits as well as employee qualifications and experiences (Brah et al., 2000, Krumova, 2017). These factors could be regarded as internal benchmarking reasons. Other factors affecting benchmarking success, which are external reasons, include competitors (Achim et al., 2009). Benchmarking reasons were divided for the purpose of the current study into two types: internal (organizational) benchmarking reasons and external (environmental) benchmarking reasons. The activities of benchmarking include developing and maintaining a database of information relating to purchasing, lead times, manufacturing or purchasing procedures, supplier-customer relationship, and supplier selection. The key areas of SCM's benchmarking practices are integrated supply chain management, overall performance measurement, and information technology systems / systems (Reutterer & Kotzab, 2000). SCM benchmarking requires assessment of strategic cost management throughout the supply chain, integration of procurement and supply chain management, outsourcing / outsourcing strategy and process and identifying value along the integrated supply chain (Caplics & Sheffi, 1995). Researchers should focus on the following objectives of SCM benchmarking: consistent application across the enterprise and supply chain; give access to comparative benchmarking data for selected effectiveness measures and key processes; better knowledge of procurement and supply chain best practices and the development of important current practices; comparison of cross-sectional units; independent analysis of current performance, strategies and methods;

continuous improvement through self-assessment and benchmarking updates; capacity for inter-company benchmarking (Aigbogun et al., 2022; Akbari, 2018; Mohamed Udin et al., 2006).

2.1.1 Internal benchmarking reasons

Organizational benchmarking reasons, which are related to the organization itself, refers to, as found in the literature, top management support, internal assessment, employee participation. According to Krumova (2017), university benchmarking is firstly related to the management of the institution. Brah et al. (2000) asserted that top management support is critical for benchmarking success. Burquel and van Vught (2010) added another factor for benchmarking success, which is top management involvement. To explore the effect of top management support on benchmarking success in universities, the following hypothesis was assumed:

H₁: *Top management support is positively related to benchmarking success.*

Another pivotal factor for benchmarking is internal assessment (Brah et al., 2000). Before adopting benchmarking, universities are required to evaluate their services, programs, and processes. Burquel and van Vught (2010) concluded that benchmarking, either internal or external, should be built on the strengths and weaknesses aspects of the organization. That is, universities should analyze their internal aspects to set their benchmarking objectives. Furthermore, organizations can use benchmarking in order to assess and improve team performance (Castka et al., 2004).

H₂: *Internal assessment is positively related to benchmarking success.*

Moreover, the organizational staff was identified as an important factor for benchmarking success. Burquel and van Vught (2010) indicated that organizational leadership, adequate organizational staff, and financial resources are critical for benchmarking success. In this regard, employees who participate in the benchmarking process should have the required skills and experience (Brah et al., 2000; Bouwman et al., 2018). Lee et al. (2006) carried out a study to explore the required factors for benchmarking adoption. The authors categorized top management commitment, internal assessment, employee participation, quality department role, limitations of benchmarking, and customer orientation as essential factors of benchmarking adoption and found that employee participation had the highest effect on the adoption of benchmarking. Therefore, the following hypothesis was suggested:

H₃: *Employee participation is positively related to benchmarking success.*

Benchmarking benefits that the organization could achieve encourage the adoption of benchmarking. Examples of benchmarking benefits are not limited to the organizational willingness to adopt global best practices but also contain additional benefits such as improving quality in universities (Marciniak, 2015; Chesbrough, 2010). As documented above, benchmarking has a number of benefits, which means that universities could use benchmarking to enhance their quality of teaching and research (Kuźmicz, 2015). Therefore, cooperation between universities is deemed as an important theme of the benchmarking process (Nazarko et al., 2009). Investigating the effect of benchmarking in higher education institutions, Tasopoulou and Tsiotras (2017) indicated that benchmarking plays an important role in academic excellence improvement. The effect of benchmarking benefits on benchmarking success was examined through the following hypothesis:

H₄: *Benchmarking benefits are positively related to benchmarking success.*

2.1.1 External benchmarking reasons

Environmental benchmarking reasons are factors influencing the successful implementation of benchmarking. Such reasons include competitors and partners. According to Achim et al. (2009), benchmarking is used as an assessment tool to compare products, services as well as operations with competitors or with those who are leaders in their industry. In one word, an organization in a competitive environment is triggered to benchmark its products, services or operations with its competitors. Otherwise, organizations who have no competitors have no reason for benchmarking. The primary aim of benchmarking in universities is to elevate the competitive position of higher education institutions, either nationally or internationally (Kuźmicz, 2015). Therefore, the following hypothesis was introduced:

H₅: *Key competitors are positively related to benchmarking success.*

However, not all organizations are drawn by competition. Meade (2007) identified four types of benchmarking, which are internal, competitive, industry, and generic benchmarking. Two of these types are more suitable for universities, which are internal and industry benchmarking. The first one refers to a comparison within the same university, while the second one refers to benchmarking that took place with a partner from the same industry. Industry benchmarking could be used to identify performance standards in higher education institutions (Takashima et al., 2019; Chen & Popovich, 2003). In order to explore the effect of benchmarking partner on benchmarking success, the following hypothesis was introduced:

H₆: *Benchmarking partners is positively related to benchmarking success.*

3. Methodology

3.1 Research sample and data collection

A sample of managers in managerial positions was selected to gather the required data. It encompassed 200 respondents. They received a questionnaire developed for the current study and designed using the five-point Likert scale (1 = strongly

disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree). A total of 167 questionnaires with a response rate of 83.5%.

3.2 Research model

Fig. 1 shows the general conceptual model of the study. It consists of two independent variables, i.e., internal benchmarking reasons and external benchmarking model. Hence, the model includes two main hypotheses assumed to explore the effects of these two independent variables on the dependent one, which is benchmarking success.

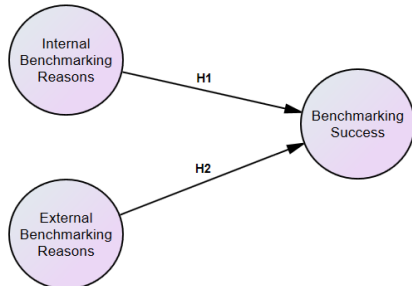


Fig. 1. General conceptual model

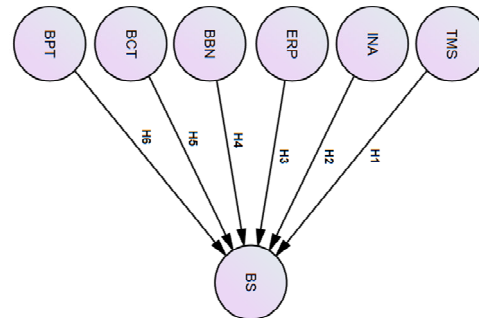


Fig. 2. Detailed conceptual model

As stated in the above section, internal benchmarking reasons were divided into four types: top management support (TMS), internal assessment (INA), employee participation (ERP), and benchmarking benefits (BBN), while external benchmarking was conceptualized into two types, which were benchmarking competitors (BCT) and benchmarking partners (BPT). Therefore, the general model was redesigned as shown in Fig. 2 to portray the effects of six reasons for benchmarking-on-benchmarking success. The new model in Fig. 2 contains six hypotheses.

3.3 Measures

Internal benchmarking reasons are top management support, internal assessment, employee participation, and benchmarking benefits, while external benchmarking refers to benchmarking competitors and benchmarking partners. These independent variables are assumed to exert significant effects on benchmarking success as a dependent variable. The measures for independent and dependent variables are shown in Table 1.

Table 1 Research questionnaire

Variables	Items	References
Top management support	Top management supports benchmarking implementation	Brah et al. (2000), Emilia et al. (2020), Takashima et al. (2019), Marciniak (2015), Castka et al. (2004), Burquel & van Vught (2010), Achim et al. (2009), Gichinga & Mukulu (2015), Selhofer & Mayringer (2001), Elmuti & Kathawala (1997), Kumar et al. (2006), Tasopoulou & Tsiotras (2017), Nazarko et al. (2009), Emilia et al. (2020).
	We are committed to benchmarking projects	
	We integrated benchmarking and strategic planning	
	We understand the objectives and benefits of benchmarking	
Internal assessment	Our organizations is open to new ideas	
	We have no resistance to change	
	We have our own quality program	
	We have the required budget for conducting benchmarking	
Employee participation	Our organization has no need to implement benchmarking	
	Our employees were trained on benchmarking	
	Our employees understand the objectives of benchmarking	
	We have a committee to direct benchmarking implementation	
Benchmarking benefits	Our employees are willing to participate in benchmarking process	
	We fully understand the benefits of benchmarking	
	Benchmarking increases our service innovation	
	Benchmarking improves our decision-making processes	
Benchmarking competitors	Benchmarking enhances the reliability of our operations	
	We can use competitive benchmarking to improve our performance	
	We prefer non-competitor benchmarking	
	In our case competitive benchmarking in no longer relevant	
Benchmarking partners	Competitor information is difficult to obtain.	
	The partner university is selected based on benchmarking objectives	
	Information sharing distinguishes benchmarking with partners	
	We can achieve mutual objectives by benchmarking with partners	
Benchmarking success	Benchmarking with partners improves our strategic intentions	
	We have relevant pre-conditions for benchmarking implementation	
	Benchmarking benefits justifies the implementation of benchmarking	
	We can manage our benchmarking with a world-class university	
	We can enrich opportunities for students and staff	

3.4 Reliability and Validity

Exploratory factor analysis (EFA) was conducted to assess both reliability and validity. Reliability was measured by composite reliability (CR) while validity was evaluated based on the average variance extracted (AVE). The results are depicted in Table 2.

Table 2
Rotated component matrix^a, descriptive, AVE and CR

	Component							M	SD	AVE	CR
	1	2	3	4	5	6	7				
Q1			0.847								
Q2			0.856					3.62	0.66	0.667	0.889
Q3			0.736								
Q4			0.822								
Q5	0.831										
Q6	0.763										
Q7	0.764							3.66	0.65	0.605	0.884
Q8	0.784										
Q9	0.744										
Q10						0.758					
Q11						0.785					
Q12						0.755		3.56	0.62	0.602	0.858
Q13						0.804					
Q14					0.735						
Q15					0.785						
Q16					0.798			3.64	0.70	0.604	0.859
Q17					0.789						
Q18		0.934									
Q19		0.935									
Q20		0.738						3.68	0.62	0.782	0.934
Q21		0.915									
Q22				0.777							
Q23				0.846							
Q24				0.734				3.62	0.73	0.603	0.858
Q25				0.743							
Q26						0.749					
Q27						0.697					
Q28						0.836		3.70	0.69	0.615	0.864
Q29						0.845					

Extraction method: Principal component analysis.

Rotation method: Varimax with Kaiser Normalization.

The results in Table 2 indicated that there are seven components with standardized factor loadings ranged between 0.697 and 0.935. The degree of benchmarking success from respondents' perspective as measured by the total mean was high (M = 3.70, SD = 0.69). In terms of reliability as evaluated by composite reliability, the results confirmed that the scale was reliable. All CR values were greater than 0.70 (Euchi et al., 2018; Al-Tit et al., 2019). Validity, as assessed by the average variance extracted, was also ensured based on AVE values, which were greater than 0.50 (Al-Tit, 2020; Hadj et al., 2020).

4. Hypotheses testing and discussion

Prior to hypotheses testing, model fit was tested based on four indices, which are the normalized chi-square (χ^2/df), the goodness of fit index (GFI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). The results as shown in Table 3 clarify that the structural model fits the current data well.

Table 3
Results of model fit

Index	Value	Criterion	Result
χ^2/df	1.79	< 3.0	Accepted
GFI	0.89	> 0.90	Accepted
CFI	0.91	> 0.90	Accepted
RMSEA	0.069	< 0.08	Accepted

Fig. 3 demonstrates the structural model in which six variables were linked to benchmarking success (BS). The results as demonstrated in Table 4 asserted that total management support (TMS) had a significant effect on benchmarking success ($\beta = 0.209$, $P = 0.004$). Moreover, internal assessment (INA) had a significant effect on benchmarking success ($\beta = 0.372$, $P = 0.004$). Employee participation (ERP) exerted a significant effect on benchmarking success ($\beta = 0.200$, $P = 0.026$). Benchmarking benefits had also a significant effect on benchmarking success ($\beta = 0.295$, $P = 0.004$) and benchmarking partner (BPT) had a significant effect on the same dependent variable ($\beta = 0.228$, $P = 0.024$). Finally, the results indicated that benchmarking competitors (BCT) had no significant effect on benchmarking success ($\beta = 0.046$, $P = 0.462$).

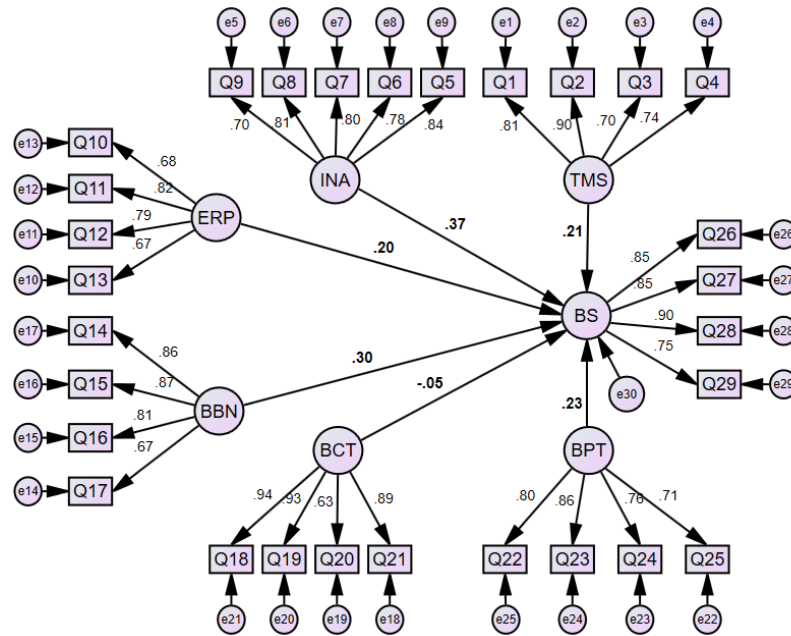


Fig. 3. Research structural model

Table 4
Standardized regression weights

	Parameter		Estimate	Lower	Upper	P
BS	←	BBN	0.295	0.139	0.425	0.004
BS	←	INA	0.372	0.212	0.531	0.004
BS	←	TMS	0.209	0.089	0.349	0.004
BS	←	ERP	0.200	0.047	0.330	0.026
BS	←	BCT	-0.046	-0.149	0.057	0.462
BS	←	BPT	0.228	0.080	0.395	0.024

The results of this study are similar to some of the results of previous studies. The current study found that top management support is an important reason for benchmarking success. The same reason was identified by Brah et al. (2000) in their study on benchmarking in higher education institutions. According to Burquel and van Vught (2010), top management involvement is the main reason for benchmarking success. Therefore, managers in the higher level play a significant role in benchmarking projects through their support, commitment, integration of benchmarking and strategic planning, and their willingness to achieve benchmarking objectives.

The second reason identified in this study is university internal assessment. Brah et al. (2000) also stated that higher education institutions should assess their services, processes and programs prior to benchmarking implementation. Burquel and van Vught (2010) added that a cornerstone of benchmarking is that it is established based on the strengths and weaknesses of the organization. In fact, university awareness of its internal circumstances aids its direction in setting benchmarking objectives. Examples of such objectives is performance improvement (Castka et al., 2004). A university is gauged internally in terms of its openness to new ideas, quality programs as well as the dedicated budget for benchmarking. Employee participation was found as a significant reason for benchmarking success. Such a reason was conceptualized in the present study as employee benchmarking training, employee awareness of benchmarking objectives, willingness to take a significant part in the process of benchmarking. The results of some previous studies (e.g., Lee et al., 2006; Krumova, 2017; Brah, Ong & Rao, 2000) found that employee participation is a very important reason for benchmarking success. For Lee et al. (2006), the most influential reason for benchmarking is employee participation.

Benchmarking benefits as core reasons for benchmarking success guided universities to adopt benchmarking projects and hence encourage the successful implementation of such a project. Through benchmarking, universities could adopt global best practices in different areas such as process, teaching and research quality improvement (Marciniak, 2015; Kuźmicz, 2015; Gichinga & Mukulu, 2015), academic excellence improvement (Tasopoulou & Tsiotras, 2017), gaining competitive advantage, increasing client (student) satisfaction, and developing management skills (Nazarko et al., 2009). Finally, a benchmarking partner was found as a significant reason for benchmarking success. According to Nazarko et al. (2009), benchmarking collaboration among universities is an inescapable reason for benchmarking success. Universities select their benchmarking partner based on their objectives and share information with partners to achieve mutual objectives. Numerous researchers (e.g., Takashima et al., 2019; Meade, 2007; Achim et al., 2009) had highlighted the importance of benchmarking partners.

5. Conclusion

The aim of the study was to explore the reasons for benchmarking success in public universities. Five reasons were used based on a literature review of related works on benchmarking. The results found that top management support, university internal assessment, employee participation, benchmarking benefits, and benchmarking partners were significant reasons for benchmarking success. In addition, the results indicated that competitor benchmarking had no effect on benchmarking success. In light of these results, it was concluded that universities seeking to adopt a benchmarking initiative should consider the benefits that the university would gain from benchmarking such as performance improvement, conduct an internal assessment to be aware of its benchmarking area, and select an adequate benchmarking partner. These considerations should be taken in line with strong support from top management and staff willingness to participate in the benchmarking process.

6. Managerial and academic implications

The results of this study can be restated in terms of a number of managerial and academic implications. First, universities are required to understand the benefits behind the adoption of benchmarking and to identify the preferred benefits in order to select an adequate university or a group of universities for benchmarking. Second, top management commitment and employee participation are essential reasons for benchmarking due to managers and employees' roles in guiding and facilitating the process of benchmarking. Third, knowing the reasons for benchmarking could help universities to select their adequate benchmarking partners. Furthermore, researchers are provided with a theoretical and empirical framework on the successful implementation of benchmarking in universities. They could use this framework to enrich the literature on several topics like strategic planning in public universities, university social responsibility, education quality, and research outcomes.

7. Limitations

The study is limited to its theoretical foundation, which was built on five reasons of benchmarking success, which were top management support, university internal assessment, employee benefits, benchmarking benefits, competitor benchmarking and partner benchmarking. On the other hand, data were collected using a cross-sectional design from a small sample size. These limitations should be considered when generalizing results.

8. Future studies and recommendations

Universities seeking to improve their performance and to gain a global position on the academic world map are called for carrying out benchmarking projects; therefore, researchers should investigate numerous areas in this regard such as exploring the indicators used by universities in their benchmarking initiatives, university fund for academic staff and students, university educational processes, as well as university entrepreneurship.

Acknowledgements

The authors would like to thank the Deanship of Scientific Research in Saudi Electronic University and the Arab Open University, Riyadh, Saudi Arabia.

References

- Achim, M. I., Cabulea, L., Popa, M., & Mihalache, S. S. (2009). On the role of benchmarking in the higher education quality assessment. *Annales Universitatis Apulensis: Series Oeconomica*, 11(2), 850.
- Aigbogun, O., Xing, M., Fawehinmi, O., Ibeabuchi, C., Ehido, A., Ahmad, R., & Abdullahi, M. (2022). A supply chain resilience model for business continuity: The way forward for highly regulated industries. *Uncertain Supply Chain Management*, 10(1), 1-12.
- Akbari, M. (2018), Logistics outsourcing: a structured literature review. *Benchmarking: An International Journal*, 25(5), 1548-1580.
- Alstete, J. W. (1995). *Benchmarking in higher education: Adapting best practices to improve quality*. ASHE-ERIC Higher Education Report No. 5. ERIC Clearinghouse on Higher Education, Washington, DC.
- Al-Tit, A. A. (2020). The impact of AMO-HR systems on proactive employee behavior: The mediating contribution of leader-member and team-member exchange. *International Journal of Engineering Business Management*, 12, 1847979020947236.
- Al-Tit, A., Omri, A., & Euch, J. (2019). Critical success factors of small and medium-sized enterprises in Saudi Arabia: Insights from sustainability perspective. *Administrative Sciences*, 9(32), 1–12.
- Amit, R., & Zott, C. (2012). Creating value through business model innovation. *MIT Sloan Management Review*, 53, 41-49.
- Bouwman, H., Nikou, S., Molina-Castillo, F. J., & de Reuver, M. (2018). The impact of digitalization on business models. *Digital Policy, Regulation and Governance*, 20, 105-124.
- Brah, S.A., Ong, A.L. and Rao, B.M. (2000). Understanding the benchmarking process in Singapore. *International Journal of Quality & Reliability Management*, 17(3), 259-75.
- Burquel, N., & van Vught, F. (2010). Benchmarking in European Higher Education: A step beyond current quality models. *Tertiary Education and Management*, 16(3), 243-255.
- Caplice, C., & Sheffi, Y. (1995). Review and Evaluation of Logistics Performance Systems. *International Journal of Logistics Management*, 6(1), 1-14.

- Castka, P., Bamber, C. J., & Sharp, J. M. (2004). Benchmarking intangible assets: enhancing teamwork performance using self-assessment. *Benchmarking: An International Journal*, 11(6), 571-583.
- Chen, I. J., & Popovich, K. (2003). Understanding customer relationship management (CRM). *Business Process Management Journal*, 9(5), 672-688.
- Chesbrough, H. (2010). Business model innovation: opportunities and barriers. *Long Range Planning*, 43(2-3), 354-363.
- Elmuti, D., & Kathawala, Y. (1997). An overview of benchmarking process: a tool for continuous improvement and competitive advantage. *Benchmarking for Quality Management & Technology*, 4(4), 229-243.
- Euichi, J., Omri, A., & Al-Tit, A. (2018). The pillars of economic diversification in Saudi Arabia. *World Review of Science, Technology and Sustainable Development*, 14(4), 330-343.
- Geisler, E. (2003). Benchmarking inter-organisational technology cooperation: the link between infrastructure and sustained performance. *International Journal of Technology Management*, 25(8), 675-702.
- Gichinga, L. C., & Mukulu, E. (2015). The use of benchmarking practices in achieving competitive advantage in Kenyan Universities. *International Journal of Management Research and Business Strategy*, 4(2), 99-119.
- Hadj, T., Omri, A., & Al-Tit, A. (2020). Mediation role of responsible innovation between CSR strategy and competitive advantage: Empirical evidence for the case of Saudi Arabia enterprises. *Management Science Letters*, 10(4), 747-762.
- Krumova, M. (2017). Open data benchmarking for higher education: Management and technology perspectives. *ORAȘE INTELIGENTE ȘI DEZVOLTARE REGIONALĂ*, 1(02), 47-60.
- Kumar, A., Antony, J., & Dhakar, T. S. (2006). Integrating quality function deployment and benchmarking to achieve greater profitability. *Benchmarking: An International Journal*, 13(3), 290-310.
- Kuźmicz, K. (2015). Benchmarking in university toolbox. *Business. Management and Education*, 13(1), 158-174.
- Lee, Y. P., Zailani, S., & Soh, K. L. (2006). Understanding factors for benchmarking adoption. *Benchmarking: An International Journal*, 13(5), 548-565.
- Marciniak, R. (2015). Methodological proposal for the application of international benchmarking in order to assess the quality of virtual higher education. *International Journal of Educational Technology in Higher Education*, 12(3), 46-60.
- Meade, P. H. (1998). *A guide to benchmarking: Griffith University*. New Zealand: The University of Otago.
- Meek, L. & van der Lee, J. (2005). Performance Indicators for Assessing and Benchmarking Research Capacities in Universities. Background Paper prepared for the Global University Network for Innovation – Asia and the Pacific, UNESCO-Bangkok.
- Mohamed Udin, Z., Khan, M.K., & Zairi, M. (2006). A collaborative supply chain management framework: Part 1 – planning stage. *Business Process Management Journal*, 12(3), 361-376.
- Nazarko, J., Anna Kuźmicz, K., Szubzda-Prutis, E., & Urban, J. (2009). The general concept of benchmarking and its application in higher education in Europe. *Higher Education in Europe*, 34(3-4), 497-510.
- Phipps, R., & Merisotis, J. (2000). Quality on the Line: Benchmarks for Success in Internet-Based Distance Education.
- Reutterer, T., & Kotzab, H. W. (2000). The Use of Conjoint-Analysis for Measuring Preferences in Supply Chain Design. *Industrial Marketing Management*, 29(1), 27-35.
- Rosman, R., & Stuhura, K. (2013). The implications of social media on customer relationship management and the hospitality industry. *Journal of Management Policy and Practice*, 14(3), 18-26.
- Selhofer, H., & Mayringer, H. (2001). Benchmarking the information society development in European countries. *Communications & Strategies*, 43(3), 17-55.
- Takashima, M., Burmeister, E., Ossenber, C., & Henderson, A. (2019). Assessment of the clinical performance of nursing students in the workplace: Exploring the role of benchmarking using the Australian Nursing Standards Assessment Tool (ANSAT). *Collegian*, 26(4), 502-506.
- Tasopoulou, K., Tasopoulou, K., Tsiotras, G., & Tsiotras, G. (2017). Benchmarking towards excellence in higher education. *Benchmarking: An International Journal*, 24(3), 617-634.
- Vlăsceanu, L., Grünberg, L., & Pârlea, D. (2004). *Quality assurance and accreditation: A glossary of basic terms and definitions*. Bucharest: Unesco-Cepes, p. 25, 46.

