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Leveraging Knowledge Management to Enhance Competitive Benchmarking and Operational Performance: A Ugandan Healthcare Perspective

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Abstract

This study was aimed at testing the mediating role of knowledge management on the influence of competitive benchmarking on operational performance of Uganda's hospitals. A cross-sectional survey was conducted from August 2021 to October 2021.Primary data was corrected from 53 private general hospitals. Statistical Package for Social Sciences (SPSS Version 20) was used to capture, clean and perform preliminary descriptive statistics while Partial Least Squares - Structural Equation Modeling (PLS-SEM) was done by use of SmartPLS software to test the hypotheses about the relationships among variables. Results showed that both competitive benchmarking and knowledge management had positive and significant direct effects on operational performance. The findings further indicated that knowledge management partially mediated the relationship between competitive benchmarking and operational performance. Hospitals were advised to create a suitable environment for creating, storing, sharing and utilizing knowledge in order to achieve better operational performance. Furthermore, managers needed to set aside resources and build capacity of staff to effectively benchmark other hospital operations in order to improving operational performance. This study had a number of limitations. First, the study mainly used private general hospitals thus suggesting another study to consider both public and private hospitals. Furthermore, other researches need to be done while controlling for contextual variables such as hospital age, hospital size and experience. Longitudinal studies could also help to test the causality of competitive benchmarking and knowledge management on operational performance.

Keywords: Competitive Benchmarking, Knowledge Management, Operational performance, Ugandan Hospital/healthcare.

Introduction

Operational efficiency and effectiveness of any firm have of recent become a basis for achieving better levels of other aspects of organizational performance including financial and market performance (Liu et al., 2020; Uraon & Gupta, 2020; Lee, 2019; Ali et al., 2021). A global look at the operational performance of hospitals clearly shows that health sectors are required to achieve operational efficiency and effectiveness. In fact, efficiency studies done in most health sectors using methodologies like Data Envelopment Analysis (DEA) show that healthcare systems globally are inefficient (Warren et al., 2022; Chachuli et al., 2021). In

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addition, some scholars reaffirm that health sectors in USA, India, South Africa, Tanzania and Uganda are highly affected by operational challenges characterized by high cost and low-quality services, high mortality rates, inadequate human resources, low medical product availability and high bed occupancy rates (Cutler, 2020; Gandhi & Sharma, 2018; Chellan & Sibiya, 2018, Nuhu et al, 2020; Annual health sector performance report 2019-2020). For example, in India the health sector faces challenges of lack of enough beds (0.9 beds per 1,000 populations) as compared to the global average of 2.9 (Gandhi & Sharma, 2018). Tangibility which relates to physical existence and appearance is one of the dimensions of service quality (Masele et al., 2023) and thus existence of tangible materials like hospital beds, human resource, medicines are indicative of which hospital is doing better than the other in terms operational performance. Health-care providers in USA also face global competition due to low quality and high cost medical treatment (Cutler, 2020). South Africa's health care also faces the issue of high maternal neonatal and child morbidity and mortality, rising burden of non-communicable diseases (Chellan & Sibiya, 2018).

Tanzania's hospitals face challenges of poor quality of health services and shortage of fully trained health staff in the hospitals (Nuhu et al, 2020; Swere, 2016). In Uganda, the annual health sector performance report 2019-2020 also reported that the health sector continues to face challenges of persistent increase in mortality rate, low medical product availability issues , negative attitudes of staff to patients' demands and high bed occupancy rates (Ooms et al., 2020; AHSPR , 2015/2016; Kakyo & Xiao, 2019). According to Oleribe et al., (2019), the African health sectors are majorly affected by poor quality of services characterized by inadequate human resources, Lack of access to healthcare and high disease burden. All these re affirm the poor operational performance in most health sectors globally which needs to be solved. It is thus imperative to divulge means of improving operational performance in hospitals in order to benefit from improved general organizational performance (Liu et al., 2020; Uraon & Gupta, 2020; Lee, 2019; Ali et al., 2021).

Good hospital operational performance is indicated high quality services, low mortality rates, adequate human resources, high medical product availability and low bed occupancy rates, less waiting time and deliveries on time, fewer mistakes/ defects in medical services, low medical costs and high productivity (Zehir & Zehir, 2023).Efforts to guide the attainment of good operational performance have been suggested in which some researchers' base on the service quality model to suggest the factors determining quality of service and hence operational performance (Goumairi et al. 2020; Valenzo-Jimenez et al. 2019). Other studies also suggest ways to achieve better operational performance through application of lean practices (Uhrin et al., 2017), SIX SIGMA practice (Hill et al., 2018; Muhammad et al., 2022), TQM implementation (Kurukwar, 2021; Tanjoyo et al., 2021) supply chain management practices (Aslam et al., 2021; Samad et al., 2021) and ICT usage (Amoako et al., 2022). With these existing suggestions implemented in some organizations including the health sector, the operational performance challenges are expected to reduce but unfortunately the story is far from the reality since hospitals still face problems of poor quality of services. Service quality theory shows service quality as a multi-dimensional construct reflecting the perceived quality of service by the customers in terms of tangibility(existence of physical items and physical factor) , reliability (dependability and accuracy of the service provided), responsiveness (willing to help customer and provide prompt service) of the of service as well as assurance (ability to convey

trust), and empathy (provision of individual care and attention to personal issues of the customer) (Parasuraman et al., 1988; Masele et al.,2023). Most of the times patients seek services but there are a lot of delays to work on them and the care givers are not prompt in responding to the patient needs which affects perceived service quality hospital services. Furthermore, the empathy is lacking whereby the hospital workers do not put themselves in the shoes of the customers in order to understand their problems so that they can work on them better. The tangible items like the medical equipment and drugs are most of the times lacking in hospitals and all these reduce the perceived quality of service. Quality is one of the dimensions of operational performance of hospitals alongside cost, delivery, and flexibility. Thus when the quality is lacking, the operational performance is highly affected.

Strategies like TQM and lean services have been applied but operational performance is still low. For example, a meta-analysis review of TQM implementation in the health sector shows that the TQM strategy has failed to achieve the desired operational performance results (Mosadeghrad, 2013) and more so since 2015, the proportion of health facilities that have a core set of relevant essential medicines available and affordable in the WHO Africa Region were estimated to a median value of 8% (World health statistics report, 2024) which points to poor service quality in most health service providers. Although a myriad of studies highlights possible solutions to operational performance challenges, scanty literature exists on the role of competitive benchmarking in operational performance. Moreso, existing studies portray mixed results regarding the effect of benchmarking on performance with some highlighting an insignificant effect (Mohamed, 1996; Parkan, 2005; Putkiranta, 2012; St-Pierre & Raymond, 2004). Others researchers suggest a positive relationship between the two constructs (Anyim, 2021; Alosani & Al-Dhaafri, 2020; Abazeed, 2017; Sutia et al, 2020). Northcott & Llewellyn (2005) also found that the correlation between benchmarking and internal and external quality results was weak. Hwang et al., (2013) found that benchmarking represents a small percentage in the performance improvement in the Singapore construction industry.

Additionally, a large number of the studies that have tried to solve the operational performance challenges were mostly done in manufacturing sector of developed countries (Alosani & Al-Dhaafri, 2020; Mohamed, 1996; Maiga & Jacobs, 2004) and less in service sector. The influence of competitive benchmarking on operational performance is debatably not direct. For example, Lu et al., (2010) observe that external benchmarking may not always be the best way to solve problems and maintain competitive advantage said. Some authors (such Leal &Roldan, 2001; Tsai et al., 2020; Ali & Anwar, 2021) argue that benchmarking must first contribute to knowledge management for it to bring operational performance. Knowledge management, is a set of processes, associated with retrieval of tacit as well as explicit knowledge, transfer and use of knowledge in order to increase the company's intellectual capital that significantly drive product and service innovation that impacts business performance (Zia et al., 2023). It is through proper knowledge management organization activity becomes perfect, giving benefit to a firm from the ability to provide added value, to nourish and support its competitive advantage (Simaškienė & Dromantaitė-Stancikienė, 2014). Tsai et al. (2020) assert that benchmarking helps to facilitate organizational learning which is an important channel for creating and transferring knowledge and a key factor affecting organizational performance. According to Leal and Roldan (2001) benchmarking is an effective process that contributes to knowledge management and provides a methodology for individual and organizational learning and helps to adjust organizational competition strategies to their environment's condition. The

benchmarking process is understood as a way of finding, capturing and disseminating knowledge by means of joint intra- and inter-organizational learning (Leal &Roldan, 2001). Knowledge creation, knowledge storage, knowledge sharing and Knowledge application represent four facets of knowledge management (Ali & Anwar, 2021). The studies of Tsai et al. (2020) and Ali and Anwar (2021) hint on the fact that benchmarking goes through knowledge management to affect organizational performance.

Pioneered by Xerox corporation (Alosani & Al-Dhaafri, 2020; Voss et al., 1997), various definitions of benchmarking exist in literature with some looking at it as a method of measuring and comparing an organization's business performance with a reference organization (Babović et al.,2012); a continuous process of measuring and comparing an organization's practices in products and services with superior organizations (Salem ,2013); a process for measuring your performance against best-in-class companies and then using the analysis to meet and surpass the best-in-class companies (Voss et al., 1997). Jetmarová (2012) argues that competitive benchmarking can be appropriately done after critically answering the following four important questions: What to benchmark? Who is the best? How they do it? and How are we going to do it? Impliedly, the dimensions of benchmarking are internal and external benchmarking (Kay, 2007). External benchmarking involves sub dimensions of competitive benchmarking, functional benchmarking and generic benchmarking (Abazeed, 2017) while internal involves comparing the operations of a section of the organization with other internal parts of the organization (Sutia et al, 2020). Other scholars highlight different types of benchmarking including strategic benchmarking, Process benchmarking, Performance benchmarking (Lankford, 2022). In this research, the type of benchmarking used is competitive benchmarking since it is the most common type of benchmarking done by organization in which they compare their operations with those of their rivals/competitors with the aim of gaining superiority/competitive advantages and also maintaining standard service delivery (Lankford, 2022). Yet, little is known about the mediating role of knowledge management on the relationship between competitive benchmarking and operational performance. Besides, empirical evidences available are mostly from developed countries that contextually different from developing countries including Uganda. The current study aimed at testing the mediation effect of knowledge management on the relationship between competitive benchmarking and operational performance of hospitals in Uganda.

Theoretical review

Business Excellence Models (BEMs) including European Foundation for Quality Management, Malcolm Baldrige National Quality Award (MBNQA), Australian Business Excellence framework (ABE), Singapore Quality Award (EFQM 2012; Prajogo and Sohal, 2004; Rahman, 2001; Woon, 2000) have lately emerged as management frameworks aimed at assessing management practices and guiding organizations in improving performance (Escrig & de Menezes, 2015; Escrig et al., 2019). Literature shows that EFQM Excellence Model is the most widely used organizational framework and links the enablers of the organization (what the organization does) to the results of the organization (what the organization achieves) (Conti, 2007; EFQM,2020). The enabler group consists of leadership, people, policy and strategy, partnerships and resources and processes while the results group consists of people results, customer results, society results and key performance results like operational performance, financial performance and innovation performance (Santos-Vijande, & Alvarez-Gonzalez (2007) as in Figure 1.

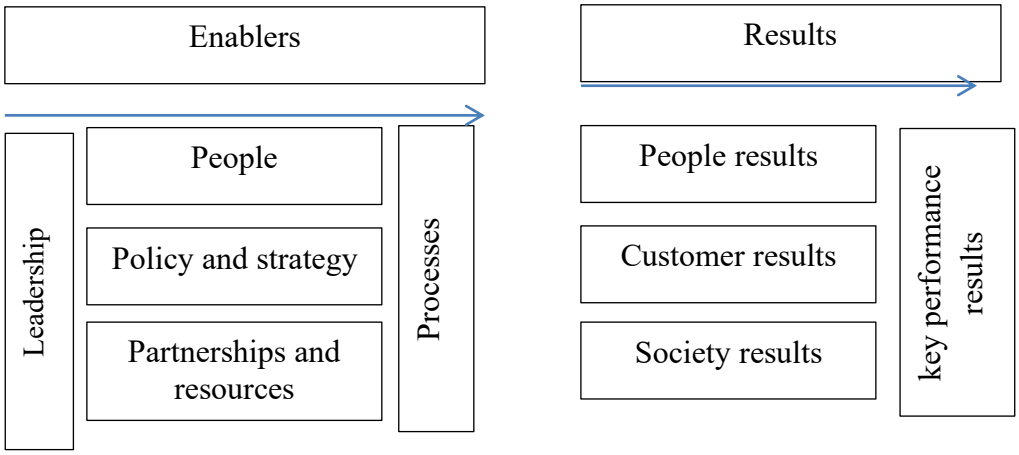

Figure 1: EFQM framework
Source: Santos-Vijande et al., 2007 pg 5

Tito Conti, one of the major proponents of the EFQM, in his paper entitled "A history and review of the European Quality Award Model" stated that the enablers of the organization are subdivided in two subgroups (systemic factors and processes) where the organization processes come in between the systemic factors and the results (Conti,2007) as illustrated in Figure 2. Accordingly, the organization processes mediate the relationship between enablers and results, a fact that is also asserted by Aboyassin et al (2011), Ooi (2014) and Qasrawi et al (2017).EFQM (2020) framework which is an edited version of EFQM (2012), and EFQM (2019) also explain the linkage of the organization enablers, the stakeholder perception and organization results

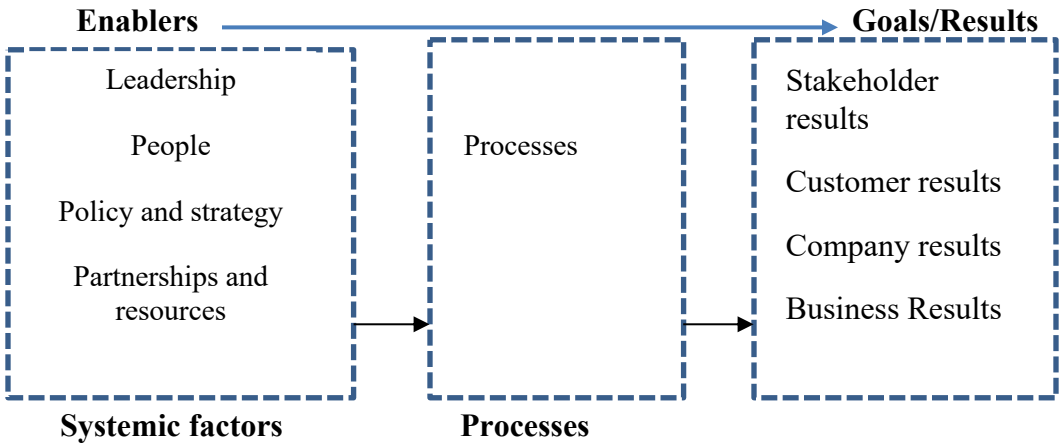

Figure 2: The positioning of processes in EFQM model.
Source: Adopted from Conti, T.A. (2007) page 11

Benchmarking is one of the organization strategies done to improve performance through knowledge management and it is thus part of a large group of systemic factors in line with Conti (2007). EFQM therefore explains the relevance of benchmarking in operational performance research and also shows that organization processes mediate the relationship between the two constructs. The knowledge based view of the Resource Based View theory (Grant, 1996)

considers knowledge as a vital strategically significant resource of a firm that is very difficult to imitate and thus yields a source of competitive advantage. Thus the knowledge based view complements the EFQM to clearly explain the role of knowledge management processes as organizational processes which can mediate the relationship between competitive benchmarking and operational performance.

Furthermore, the Resource Dependency Theory identifies that some of the critical resources that an organization may require lies outside of the organization and therefore it is necessary to create relationships with other organizations to be able to acquire such resources which then can be used to improve the performance. Therefore, Resource dependence theory complements the EFQM to show that benchmarking other organizations can help to improve the performance of the organization and also complement the knowledge-based view theory since some on the resources obtained from other organization through benchmarking is the knowledge resource. Competitive benchmarking in hospital setting involved comparison of the leadership structures and decision making process, comparison of hospital human resources processes (staff recruitment, retention, development), comparison of specific hospital service layout (patient management system, patient care), comparison of patient feedback and follow-up processes, comparison of level of technological advancement (equipment, specialized items, beds)

Empirical Literature and Hypothesis Formulation

Competitive Benchmarking and operational performance

The EFQM model demonstrates that benchmarking as a quality management practice leads to organizational results that include financial performance and non-financial performance results like operational performance outcomes. Furthermore, resource dependence theory cements the need for carrying out competitive benchmarking as some resources that are necessary for organizational performance improvement may be found on the outside of the organization (for example other competitors). Some empirical researches have also been done to explain the effect of benchmarking on operational performance and their results portray mixed findings. Voss et al., (1997) studied the effect of benchmarking and operational performance using a sample of over 600 European manufacturing sites and found that indeed Benchmarking is linked to improved operational performance since it helps in identification and adoption of improved operational practices, an increased understanding of competitive positioning, and to the larger extent improves “learning organization”. Parkan (2005) had contradicting view in which he finds no significant relationship between the two variables.

Parkan’s findings were based on measuring operational performance by Operational Competitiveness Rating Analysis without considering flexibility dimension of operational performance which was a weakness that could have affected their results. Putkiranta (2012) also examined the relationship and found no clear relationship between the two variables and suggested that unless organizations taking part in the benchmarking at the same level of technological development. St-Pierre and Raymond (2004) in their study on benchmarking-operational performance using 102 Canadian manufacturing SMEs also reported a short –term negative impact which they attribute to slowness in adapting the benchmarked practices which thus affects the delivery speed of the employees and hence perceived poor quality of hospital. Northcott and Llewellyn (2005) and Hwang et al. (2013) also found a weak correlation between benchmarking and operational performance results. Alosani and Al-Dhaafri (2020) also agree

on the direct effect of benchmarking on performance and also further state that benchmarking – performance relationship is also mediated by innovation culture.

Using a qualitative orientation approach, Hong et al. (2012) suggested that Benchmarking is an important strategic tool of business success in turbulent times. This methodological approach was also used by Siti-Nabiha and George (2021) that applied longitudinal qualitative technique and their results also supported a positive effect. The theoretical backing of the EFQM framework, resource dependence theory coupled with a large number of scholars that believe in the positive effect of competitive benchmarking on operational performance therefore led us to assume that;

H1: Competitive benchmarking has a positive effect on the operational performance.

Competitive Benchmarking and Knowledge Management

According to Gunasekera and Chong (2018), benchmarking is a major critical success factor for implementation of Knowledge management. The EFQM framework also shows that organization enablers go through organization process to yield results. This model thus suggests that benchmarking as an enabler has an effect on knowledge management as one of the vital organization process needed for performance improvements. Various other scholars have also studied the relationship between competitive benchmarking and knowledge management processes (Massa & Testa, 2004; Gunasekera & Chong, 2018; Barua, 2021). Most of these point to a positive relationship between the constructs. A positive and significant relationship was also found to exist between leadership, employee empowerment, benchmarking, and customer focus and information technology with the knowledge creation process (Shan et al., 2013). Competitive benchmarking looks outside the firm boundaries and enables comparison of practices, performances and process of acquiring external explicit and tacit knowledge and once such newly acquired knowledge is integrated with previous internal knowledge of the firm novel knowledge is generated (Massa &Testa,2004). From the EFQM framework as indicated by figure 2 in which organization enablers (Quality practices like benchmarking) influence organization processes (knowledge management process) and also further supported by the above empirical literature leads us to assumes that

H2: Competitive Benchmarking has a positive effect on knowledge management.

Knowledge management and operational performance

Knowledge based view of the resource based theory affirms that firm-specific knowledge is personal to an individual organization which makes it inimitable and thus contributes to sustainable competitive advantage (Grant, 1996). The theory thus points to the fact that knowledge management improves or is a significant determinant of operational performance.

Additional to this, studies have identified knowledge management as a positive antecedent of innovative performance and operational performance in most contexts. For example, Choi et al., (2020) in their study "Communities of practice and knowledge management systems: effects on knowledge management activities and innovation performance" done in large and mid-sized companies in Korea found that knowledge management activities positively affect innovation performance. The findings of this study highlight the importance of refining and developing knowledge-based processes to lead an entire organization to higher innovation performance. Al

Ahbabi et al., (2019) in their study about employee perception of the impact of knowledge management processes on public sector performance identified that all four knowledge management processes (knowledge creation, knowledge capture and storage, knowledge sharing and knowledge application) had a positive and significant impact on operational, quality and innovation performance of public sector in the UAE.

Furthermore, research done to investigate the impact of knowledge management processes on performance among the federal, state and semi-government organizations in the United Arab Emirates found that all knowledge management processes had a significant positive impact on the innovation, quality and operational performance of the public sector (Balasubramanian et al.,2019). Hong et al. (2018) in their study on the effect of knowledge transfer on organizational (operational and innovation) performance found out that knowledge management was positively related to all performance dimensions. Chen and Tsai (2020), Al-Sa'di et al., (2017), Pinheiro et al., (2020), Nagatiand Rebolledo (2013) and Deepak and Mahesh (2020) also reiterated the positive relationship between the two constructs. With this literature findings, we thus assume that;

H3: Knowledge management has a positive effect on operational performance.

Competitive benchmarking, Knowledge management and operational performance

Though a large number of studies point to the positive relationship between benchmarking and operational performance, some studies identify that the relationship between quality management practices and performance have intervening variables that mediate this relationship. For example, Nawaz et al. (2014) revealed that knowledge management fully mediates the effect leadership / top management support, customer focus, information and analysis on organizational performance. Birasnav (2014) also confirmed the mediating role of knowledge management between top management support and organizational performance. The studies of Nawaz et al (2014) and Birasnav (2014) lead us to assume that knowledge management also mediates the relationship between all the competitive benchmarking and operational performance since competitive benchmarking is one of the quality management practices.

H4: Knowledge management mediates the influence of Benchmarking on operational performance.

Conceptual Model

From the synthesis of both theoretical and empirical review the conceptual model was formulated. The theoretical reviews comprised review of European Foundation of Quality Management (EFQM) framework, Knowledge Based View Theory and Resource Dependent Theory. The EFQM has described the relevance of benchmarking in operational performance. Yet, it was seen from the review that, benchmarking can only lead to improved operational performance if it enhances knowledge management which is essential in enhancing the company's intellectual capital impactful enough to enhance business performance. It was from this reason the knowledge based view was reviewed to complement the EFQM in order to explain the role of knowledge management processes in mediating the relationship between competitive benchmarking and operational performance. Such relationship is well explained by

the Resource Dependency Theory which asserts that some of the critical resources such as knowledge that an organization may require, lies outside of the organization and therefore it is necessary to create relationships with other organizations to be able to acquire such resources which then can be used to improve the performance. The conceptual model is a bundle of four hypotheses as already explained above That: Competitive benchmarking significantly effects on the operational performance; Competitive Benchmarking significantly effects knowledge management; Knowledge management significantly affects operational performance; and Knowledge management mediates the relationship between benchmarking and operational performance. Figure 3 details. The subsequent parts are the methodology, presentation of findings, and the respective discussion and study implications.

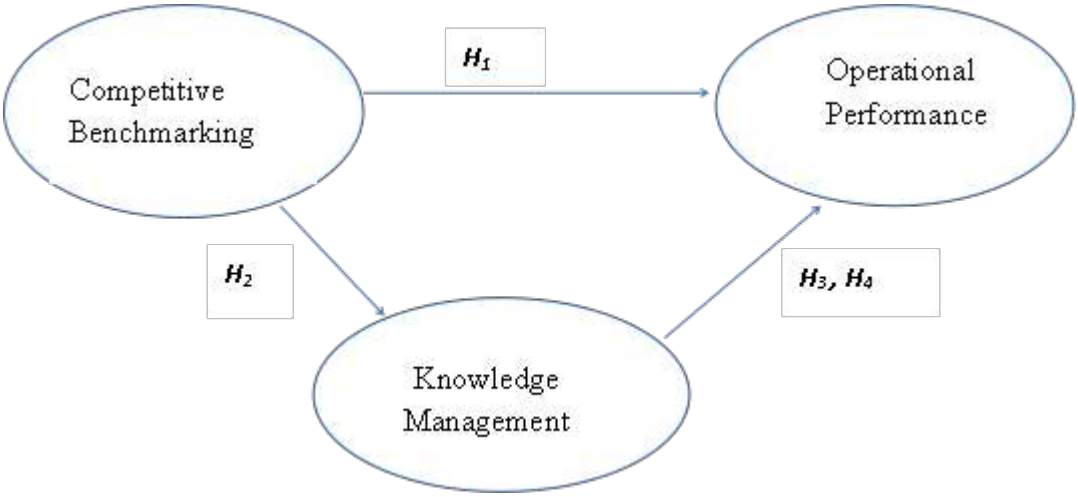

Figure 3: Conceptual Framework
Source: Authors own conceptualization

Research methodology

Positivism philosophy with deductive research approach guided this study. Positivism suggests that reality is stable and can be observed, described in an objective manner and tends to be causal and quantitative in nature (Saunders et al., 2019; Wahyuni, 2012). The operational performance of hospitals can be seen, observed and measured in terms of the flexibility, cost of providing the services, quality and delivery speed of hospitals services to patients. To identify the influence of independent variables (competitive benchmarking and knowledge management) on the dependent variable (operational performance), an explanatory research design with cross-sectional survey strategy was used in line with Aggarwal et al. (2019). The research was conducted in private general hospitals from central, eastern and western regions Uganda. This was because these regions were most affected by maternal and perinatal mortality an indication of poor operational performance (Annual health sector performance report, 2019/2020). More so, the poor performance of private hospitals yet they have better funding opportunities than public hospitals (USAID report, 2015) also motivated the need for the research. The financial aspect of the hospital determines their ability to execute the processes since they can facilitate whatever is needed to do a certain work activity. It would therefore imply that since private hospitals have better financial backing, their operational performance indicators would be better which not the case is. This motivated the researcher to study and find out the reason for the poor

performance. Lastly, the three regions constituted 85% of the total number of private general hospitals in the country which showed that a sample from these regions could ably be representative of the health sector for the whole country. Moreover, these hospitals are all involved in competitive benchmarking since they have to abide by the ministry of health strategy of benchmarking as highlighted in the national Quality Improvement Framework & Strategic Plan 2010/11–2014/15.

The total population of the private hospitals was 93 and from these, a sample of 75 was used for the study. This was calculated using Yamene's formula $n = \frac{N}{1+Ne^2}$ $n = \frac{N}{1+Ne^2}$ where n is the sample size, N is the total number of private hospitals and e is level of significance (Yamane, 1973). Simple random sampling was then used to pick hospitals from the three regions. Simple random sampling was appropriate since the hospitals were homogeneous (all are private general hospitals with similar processes, structures and controlled by ministry health). From each hospital, two respondents were purposively selected to answer the questionnaire depending on their technical, fundamental expertise and experience in hospital operations. Two respondents were preferred because the researcher wanted to minimize self-reporting issues. Data obtained from the respondents was aggregated to the unit of analysis (hospital). From the 75 hospitals, 53 gave complete and usable questionnaires accounting for a response rate of 71% which is good (Nulty, 2008). Data was collected between the months of August and October 2021 using a questionnaire survey.

To ensure high levels of validity and reliability, construct measures were adopted from previous literature and oriented to suit the context of the study. The measures of knowledge management were obtained from Almahamid and Qasrawi (2017 (2017); those for operational performance from Kitchot et al. (2020) and Chavez et al (2016); those of competitive benchmarking were obtained from Brah et al (2002) and Akanmu et al (2020). The questionnaire was developed on a 5 point Likert scale with item responses ranging from 1= Strongly Disagree, 2 = Disagree, 3 = Not sure, 4 = Agree, to 5 = Strongly Agree for the main variables while the rest of the questionnaire captured the respondents and hospital demographics. Prior to data collection, the questionnaire was approved by ministry of health specifically the director general of health services who issued an acceptance letter to collect the data in the hospitals. The tool was then pre-tested and the refined questionnaire was used to collect data from the hospitals in the main study.

Analysis and presentation of Results

Demographic characteristics of respondents and hospitals

Respondent demographics showed that most of the employees were in their youthful age 30-39. Males accounted for 50.9% while females accounted for 49.1%. Most respondents also had a bachelor's degree followed by those with Diploma certificate holders, followed by masters and certificate holders and lastly a PhD degree. Data also showed that most respondents were highly experienced (Experience >10 years). Hospital demographics showed that majority of the private hospitals were old with existence of more than 20 years, implemented and were certified with ISO 9000 standards of quality practices, were large in respect to the number of beds and number of employees as most of them had averagely more than 200 usable beds and employ more than 200 employees as seen in Table 1.

Table 1: Demographic characteristics of unit of analysis (Hospitals)

	Frequency	Percent
Hospital age		
Less than 10	1	1.9
10-19 years	5	9.4
More than 20 years	47	88.7
Average number of employees		
0-99 workers	3	5.7
100-199 workers	5	9.4
200-299 workers	17	32.1
300 and above	28	52.8
Average number of usable patient beds		
Less than 100	4	7.5
100-199 beds	8	15.1
Above 200 beds	41	77.4
Teaching status		
Teaching Hospital	49	92.5
Non-teaching hospital	4	7.5
Certification with ISO 9000		
Yes	53	100

Source: Research data, 2021

Results of the PLS-SEM

Cleaned data was exported to SmartPLS to further analyze the relationships that existed among the variables. The Structural model with reflective indicators was specified and it contained both the path and measurement models (Hair et al., 2014).

Measurement model results

Cronbach's alpha and composite reliability were used to measure internal consistency. Average variance extracted (AVE) was used to measure convergent validity while item-cross loadings and Heterotrait-Monotrait Ratio of correlations (HTMT) were used to measure discriminant validity of the constructs. From Table 3, Cronbach's Alpha and Composite Reliability were both above 0.7 an indication of internal consistency while the AVE was above 0.5, an indication of convergent validity for the constructs in line with Purwanto & Sudargini (2021).

Table 3: Internal consistency and convergent validity tests

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Competitive Benchmarking	0.86	0.874	0.899	0.641
Knowledge Management	0.848	0.852	0.892	0.624
Operational	0.853	0.881	0.894	0.628

Performance				

Source: Research data, 2021

Results from Table 4 shows that there was discriminant validity since the loadings of the indicators on the constructs were much higher than the cross loadings on the other constructs. This result concurs with HTMT ratio results in table 4 which showed that the HTMT ratio for all constructs were below 0.9 in line Henseler et al. (2015).

Table 4: HTMT Ratio and Item Cross-Loadings of the indicators on the constructs

HTMT Ratio			
	Competive Benchmarking	Knowledge Management	Operational Performance
Competitive Benchmarking			
Knowledge Management	0.795		
Operational Performance	0.664	0.689	
Item Cross-Loadings of the indicators on the constructs			
	Competitive Benchmarking	Knowledge Management	Operational Performance
BE2	**0.740**	0.435	0.354
BE3	**0.824**	0.517	0.480
BE5	**0.870**	0.641	0.608
BE6	**0.813**	0.594	0.483
BE7	**0.750**	0.542	0.435
KMC2	0.61	**0.798**	0.541
KMS1	0.591	**0.843**	0.383
KMS2	0.558	**0.802**	0.448
KMT1	0.497	**0.782**	0.543
KMT4	0.452	**0.718**	0.461
OPD2	0.378	0.381	**0.760**
OPD3	0.488	0.434	**0.808**
OPQ2	0.296	0.372	**0.693**
OPQ3	0.570	0.616	**0.872**
OPQ4	0.567	0.531	**0.819**

Source: Research data, 2021

Path relationships for the mediated model

Collinearity diagnostics were also estimated and both inner and outer VIF values were less than 5, an indication of lack of multicollinearity in line with Shrestha (2020). The mediation model fitted and shown in Figure 4 and table 5 yielded both competitive benchmarking and knowledge management as significant predictors of operational performance with $\beta=0.349$, $p=0.014$ and

β=0.365, p=0.014 respectively. Competitive Benchmarking also has a significant positive effect on knowledge management β=0.690, p<0.001. From table 4, it can be seen that all indicators had high loadings on their respective constructs an indication of convergence validity and a high average variance explained by these indicators on the respective constructs.

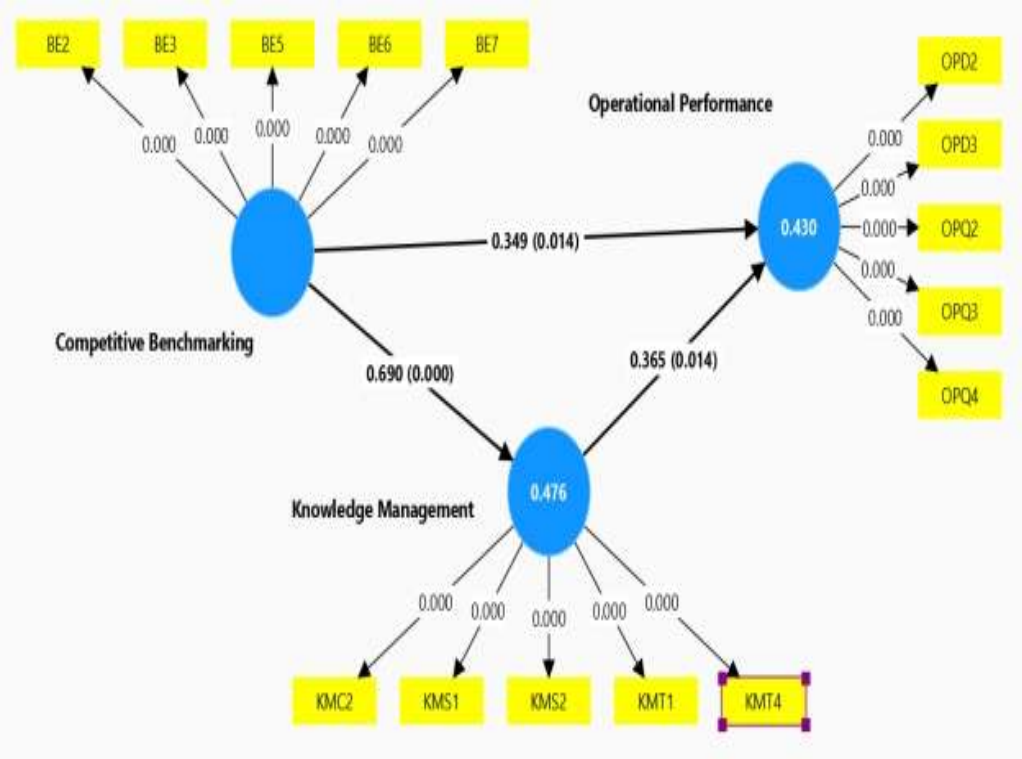

Figure 4: Mediation model

Table 5: Path coefficients and the coefficient of determination for the mediated model

Direct effects				
Path	*Path Coefficient*	*Standard Deviation (STDEV)*	*T Statistics*	*P Values*
Competitive Benchmarking -> Operational Performance	0.349	0.138	2.536	0.014
Competitive Benchmarking -> Knowledge Management	0.69	0.075	9.159	0.000
Knowledge Management -> Operational Performance	0.365	0.145	2.518	0.014
Indirect effects				

Path	*Path Coefficient*	*Standard Deviation (STDEV)*	*T Statistics*	*P Values*
Competitive Benchmarking -> Knowledge Management -> Operational Performance	0.252	0.104	2.429	0.015

Coefficient of Determination

	R Square	R Square Adjusted
Knowledge Management	0.476	0.465
Operational Performance	0.430	0.408

Source: Research data, 2021

From Table 5, the R Square for operational performance of 0.430 shows that competitive benchmarking and knowledge management explain 43% of the variation in operational performance while the remaining 57% is due to other factors that affect operational performance which were not included in the model. The R square of 0.476 shows that 47.6% of the variation in knowledge management is explained by competitive benchmarking and the remaining 52.4% is due to other factors not yet considered. Assessment of the effect sizes (*f Square)* in table 6 showed that knowledge management had a higher effect on operational performance $f^2=0.123$ than competitive benchmarking f^2=0.112 according to Cohen (1988). Furthermore, competitive benchmarking had a very high effect on knowledge management $f^2=0.908$.

The model had a good predictive relevance for both operational performance and knowledge management with Q^2=0.234 and 0.261 respectively in line with Hair et al. (2021) as in table 6.

Table 6: Assessment of effect sizes and predictive relevance of the model

f Square effect sizes (f^2)			
	Competitive Benchmarking	Knowledge Management	Operational Performance
Competitive Benchmarking		*0.908*	*0.112*
Knowledge Management			*0.123*
Q Square predictive relevance (Q^2)			
	SSO	SSE	Q^2 (=1-SSE/SSO)
Competitive Benchmarking	265	265	0
Knowledge Management	265	195.783	0.261
Operational	265	202.897	0.234

Performance			

Source: Research data, 2021

Hypotheses testing

Hypothesis testing was done by considering the path coefficients and their significances for both the direct and indirect effects as in table 5. The direct effect of competitive benchmarking on operational performance was significant and also the indirect effect through knowledge management was significant implying partial mediation/ complementary mediation in line with Zhao et al. (2010). The decisions on the hypotheses for this research are summarized in table 7.

Table 7: Decision on the Hypotheses

Hypotheses	Remarks
H1: competitive Benchmarking has a positive significant effect on operational performance	**Supported**
H2: competitive Benchmarking has a positive significant effect on knowledge management	**Supported**
H3: Knowledge management has a positive significant effect on operational performance	**Supported**
H4: Knowledge management mediates the relationship between competitive Benchmarking and operational performance	**Partial/complimentary mediation supported**

Source: Research data, 2021

Importance performance map analysis (IPMA)

The importance performance map analysis helps to identify the important key areas for improvement (Abalo et al., 2007). In this study, the IPMA analysis was done to help the managers of the hospitals identify where to concentrate their efforts.

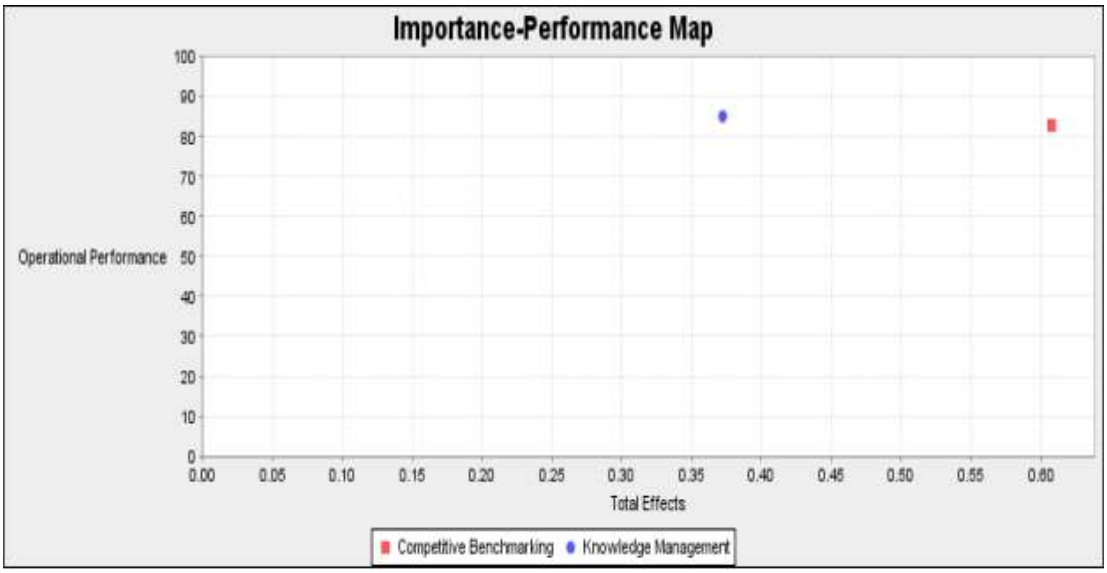

Figure 5: Importance -Performance Map of exogenous constructs on Operational performance
Source: Research data, 2021.

IPMA results in Figure 5 shows that Benchmarking is more important in predicting operational performance than Knowledge Management with importance values 0.608 and 0.372 respectively yet the actual performance of hospitals in Benchmarking was lower than Knowledge Management as given by the performance results 82.842% and 85.103% respectively.

Discussion of results

Competitive Benchmarking and Operational Performance

The results of the test indicated a significant positive relationship between competitive benchmarking and operational performance (β=0.349; p=0.011) in line with Alosani and Al-Dhaafri (2020), Siti-Nabiha and George (2021). The results also extended the thinking of Putkiranta (2012) who idealized that sometimes competitive benchmarking yields result when benchmarking firms are at same levels and size of operation. Since the hospitals considered where all general private hospitals and the levene's test showed that they were not significantly different, then a positive benchmarking –operational performance was expected in line with Putkiranta (2012). The positive relationship obtained from this study was inconsistent with scholars who identified negative or no impacts of benchmarking on operational performance (St-Pierre & Raymond, 2004; Parkan, 2005). The previous literature about the relationship between competitive benchmarking and operational performance revealed mixed results (both positive and negative and no effect). The results of this relationship in this paper thus shed more light on the positive relationship between the two constructs in agreement with scholars that had previously obtained similar results. The current study therefore upholds the view of positive effect of competitive benchmarking on operational performance. Thus, competitive benchmarking of hospitals is healthy for performance improvement.

Competitive Benchmarking and Knowledge Management

Analysis of data from Uganda's health sector also yielded a positive significant effect of competitive benchmarking on knowledge management (β=0.69; p<0.001) in line with Gunasekera & Chong (2018), Barua(2021), Shan et al (2013) cementing the need to hospitals to occasionally benchmark for effective knowledge management. Benchmarking introduces the staff to new practical information which widens their knowledge base and sometimes shows them challenging situations especially when the competitors are doing much better than them. The challenges identified are naturally expected to drive them to share information with the view that if the knowledge is shared and executed as team then they can catch up or eventually do even better than the competitors. All this shows the need for hospitals to encourage competitive benchmarking for better knowledge management (creation, storage, transfer/sharing and utilization of knowledge).

Knowledge Management and Operational performance

Knowledge management was found have a positive and significant effect on the operational performance (β= 0.365; p=0.012) as in table 5 which was in agreement with Choi et al. (2020), Balasubramanian et al (2019), Deepak and Mahesh (2020), and the knowledge based view theory by Grant (1996). The results implied that hospital staffs value the need for sharing knowledge and collaboration if they are to achieve efficiency and effectiveness in hospital operations. Specifically, knowledge management processes help to capture valuable information, allow easy access to knowledge resources and also reduces time wasted in

searching for information from other sources outside the organization. Regarding the mediation effect of knowledge management, the tests yielded a partial mediation results (β= 0.252; t-value=2.429; p=0.015). The positive mediation effect obtained in this study is also in line with Qasrawi et al. (2017) and Ong & Tan (2022). The partial mediation shows the great value that creating, retaining and implementing valuable information and ideas brings in ensuring that the hospitals achieve efficiency and effectiveness. Lastly, the partial mediation effect of knowledge management points to the need for getting a better mediator which could fully explain the relationship between competitive benchmarking and operational performance

Conclusions and Implications of the study

This study has provided new evidence to support the claim that knowledge management is a very important ingredient for enabling good operational performance and also partially mediates the relationship between competitive benchmarking and operational performance. Benchmarking on the operations of better performing hospitals should be followed by efforts to encourage staff to identify new knowledge, store, share the obtained knowledge throughout the hospital and utilize the obtained information and knowledge if the benchmarking strategy is to be of value. Specifically, competitive benchmarking helps staff generate new ideas and better ways of executing hospital activities. This study improves the EFQM framework by adding that competitive benchmarking better improves the performance when knowledge management is in place. The research also shows that combining EFQM and RBT theories better explains operational performance. From a practical perspective and the IPMA results in Figure 5, this research recommends that hospital managers need to ensure that the right structures are in place to enable creation, proper storage, knowledge transfer and utilization of new knowledge. Managers need to carefully identify the benchmarking partners, what needs to benchmarked and also how the benchmarked information will be incorporated in the hospital's services.

Limitations and Areas of Further Research

Firstly, only private hospitals were used in the study. This could have an effect on the outcomes if both private and public hospitals are considered. Despite the limitation, policy makers in Uganda especially those in the health sector and other service based organizations like financial services could find the results of this study very useful. Similar studies should therefore be done to test the derived model in both public and private hospitals including those health facilities at lower levels like health centre IV and also other service – oriented organizations like schools, universities, banks and hotels to validate the applicability of the derived model in the general service sector. Both public and private hospitals in Uganda are expected to carry out competitive benchmarking as a quality improvement strategy for better healthcare service provision as highlighted by the National Quality Improvement Framework & Strategic Plan Ministry of Health 2010/11–2014/15. It is thus worth researching on the impact of benchmarking processes on the operational performance outputs in public hospitals which would reveal a comparative basic with the results of the private hospitals as shown by this study. The level of benchmarking in private and public institutions is different. According to Djuric et al (2013), there are various differences between benchmarking in the private and public sectors. Benchmarking in the private sector is seen as an internal management tool and its application is voluntary while the benchmarking in the public sector can be voluntary, but its application is often compulsory; Knowledge gained through private sector benchmarking can be considered private property and thus does not have to be shared while Knowledge gained through public sector benchmarking

can be considered public property and thus should be shared (Bowerman et al. ,2002) Triantafillou (2007) also asserts that benchmarking in the public sector is usually meant to be a governing technique seeking to enable self-governance of individuals or organizations through the creation of knowledge on the activity targeted while benchmarking in the private sector is essentially seen as a tool of improvement. Since the mode of operationalization of benchmarking in the two sectors have some differences, the results of benchmarking process on operational performance results and knowledge management is most likely to be different. The study on public hospitals is most likely to reveal differing results an thus this is worth checking to ascertain the generalizability of the results of this study to all the hospitals irrespective of their nature.

Longitudinal study is needed to test and ascertain the long term impact of competitive benchmarking on operational performance as this study utilized a cross-sectional design which cannot help to capture the effects among variables in a long period of time. Additionally, the study of the relationships among the variables (benchmarking, knowledge management and operational performance) was done without controlling for demographic variables that have a potential to affect these relationships for example hospital size. It would thus be necessary to carry out similar studies but control for most of hospital demographics in order to ascertain the actual relationships among the variables in this study. Moreover, more research needs to be done to test whether Knowledge Management mediates the relationship between other quality management practices with Operational Performance in order generalize the mediating role of knowledge management on all quality management practices and operational performance since benchmarking have widely been regarded as quality management practice in literature.

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