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RESEARCH ARTICLE

Factors Associated with Outsourcing Support Services by General Hospitals in Uganda

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Abstract:

Background:

The objective of this study was to identify factors associated with the decision, process and practices of outsourcing support services by general hospitals in Uganda.

Methods:

A cross sectional survey design was used; 32 hospitals were sampled using stratified random sampling. Trained research assistants distributed self-administered questionnaires to managers in the sampled hospitals. Wilcoxon-Mann-Whitney tests were performed on the collected data using SAS 9.3.

Results:

Majority (59%) of hospitals surveyed were rural; 41% were urban. More than half (n=23; 72%) reported to be outsourcing at least one support service. There was a significant difference in the proportion of rural and urban hospitals outsourcing and those not outsourcing (p=0.0033). While outsourcing, rural hospitals were more likely to report challenges with the availability of vendors (p=0.0152); urban hospitals were more likely to report challenges with contractual issues (p=0.0056). Ministry of Health owned hospitals were more likely to report political interference in the outsourcing process (p=0.0065). Rural hospitals were more likely to monitor the continued need for outsourcing compared to their urban counterparts (p=0.0358). We found no significant differences (p>0.05) in the hospital managers' perceptions about the benefits of outsourcing, outsourcing risks, characteristics of services that need to be outsourced and outsourcing barriers among outsourcing and non-outsourcing hospitals.

Conclusion:

Hospital location and ownership have an influence on aspects of the outsourcing decision, process and practices by general hospitals in our study. However, the perceptions of the hospital managers regarding outsourcing have no influence on the hospital's outsourcing decision and practices.

Keywords: General hospital, Support services, Outsourcing, Uganda, Wilcoxon-Mann-Whitney tests, Sample.

1. INTRODUCTION

Outsourcing is a management approach that allows delegation of operational and management responsibility for components processes or services previously delivered by the enterprise, to specialized and efficient external agents. It involves the sourcing of goods and services previously produced internally within the sourcing organization from external suppliers.

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Hospitals are particularly suitable environments for outsourcing, since they offer a wide range of complex services which could be bought from other institutions [1]. Over the last decades, the hospital sector in developed countries has been under pressure both from demographic changes and increasingly scarce financial resources in social security. The hospital sector in these countries has tried to find some relief in outsourcing of services not belonging to its core competences like IT services, catering and cleaning [2]. Benefits of such outsourcing efforts have included lower costs, reduced number of personnel and higher levels of satisfaction with services provided by the hospital [3]. However, outsourcing has drawbacks as well. For example, outsourcing IT services in a hospital context can create security risks whereby sensitive clinical-related data can be accessed by unauthorized parties through a variety of devices leading to a breach of patient confidentiality [4].

Several studies have focused on outsourcing and its various aspects such as the rationale for outsourcing, the various outsourcing practices by organizations in terms of nature and scope of activities outsourced, service delivery models and vendor location. Advanced industrialized economies such as the USA, China, and Europe are the principal candidates for the origin of outsourcing transactions [5]. Hence, although various studies have addressed a wide array of aspects of outsourcing *e.g.* technical, motivational, cultural, organizational, strategic, operational and performance related [6], the studies are focused on understanding outsourcing from developed countries perspective. Few studies address outsourcing from the perspective of developing countries like Uganda. This gap in the literature is echoed by recent studies [7]. Research on outsourcing in the context of outsourcing among hospitals in a developing country such as Uganda can provide several new insights on outsourcing decisions and practices. These insights can be used to guide hospitals in deciding whether outsourcing is appropriate and feasible for their unique situation and to design interventions to encourage adoption of outsourcing by hospitals where appropriate.

1.1. Conceptual Framework

Based on a combination of the Transaction Cost Economics theory [8], Resource Based View theory [9 - 11], Contingency theory [12] and Agency theory of outsourcing [13]; we applied an attitudinal model of outsourcing as the conceptual framework for our study. According to this attitudinal model, management perceptions and attitudes towards outsourcing such as perceived benefits and advantages, perceived bottlenecks, disadvantages and risks of outsourcing, are factors that influence the outsourcing decision. Management attitudes towards outsourcing are also affected by organizational (hospital) characteristics for example, size of the hospital, location, ownership and organizational strategy. These also directly influence the outsourcing decision. Additionally, management's perception of the service and characteristics of the service under consideration for outsourcing, such as criticality of the service, frequency of need for the service, availability of vendors to provide the service in addition to the programmability or measurability of the service also influence the outsourcing decision.

1.2. Study Objective and Research Questions

The objective of our study was to identify factors associated with outsourcing support services by general hospitals in Uganda. The support services considered mainly included cleaning services, security, catering, IT services but any others mentioned by the hospital managers were also considered.

Specifically, we sought to answer the following questions: What is the relationship between a hospital's characteristics and its decision to outsource one or more of the support services it requires? What is the relationship between the hospital managers' attitudes, perception of benefits and barriers to outsourcing and their decision to outsource one or more hospital support services? What is the relationship between the hospital managers' perception of the various support services characteristics and the decision of the hospital to outsource those services?

2. MATERIAL AND METHODS

2.1. Study Design

We used a cross sectional survey design for our study. This exploratory study was part of a larger mixed methods doctoral study that investigated the practices, motivation, perceived benefits and barriers to outsourcing by hospitals in Uganda.

2.2. Sample

The sample included general hospitals (*i.e.* non-teaching and non-referral hospitals), both public sector (Ministry of

Health owned) and Non-governmental Organization (NGO) hospitals. We excluded private hospitals from our study due to difficulty in obtaining data from these hospitals.

Based on data obtained from the Ministry of Health, our study population was 92 hospitals. These were divided into two strata based on ownership and comprised of 40 government and 52 non-government hospitals. We used proportionate to size random sampling to establish the study sample. Sample size was determined in order to have sufficient statistical power (95% confidence). The required sample size was 47, comprising of 20 government hospitals and 27 non-government hospitals. However, given the enormous cost of collecting data from 47 hospitals all over the country, we eventually decided upon a sample size of 32. This is the minimum required sample size for any meaningful statistical analysis. The implied allocation for this sample size (based on proportionate stratum size) was 14 government hospitals and 18 non-government hospitals. We used systematic random sampling to select the study hospitals in each stratum to achieve the required sample of 32 hospitals.

2.3. Instruments

We used a questionnaire with close-ended questions. The questionnaire titled “*Hospital support services outsourcing questionnaire*” was developed using the conceptual framework as a point of reference and taking into consideration the literature review. The questionnaire was in English, the officially used language in all institutions in Uganda.

The questionnaire comprised of several sections including: facility identification; introduction of the study and request for consent to participate; hospital’s strategic planning process and the respondent’s opinion and knowledge about some aspects of outsourcing (9 items); hospital’s current outsourcing status, practices and the benefits or drawbacks that the hospital has experienced from outsourcing (14) items; hospital’s outsourcing process (7 items); a section for hospitals that were not currently outsourcing covering reasons for not outsourcing and future outsourcing intentions (7 items); perceived benefits/advantages of outsourcing (10 Likert scale items); perceived risks/disadvantages of outsourcing (7 Likert scale items); perceived barriers/roadblocks to outsourcing (5 Likert scale items); and perception about the characteristics of outsourced services (4 Likert scale items). A Likert item is a statement that the respondent is asked to evaluate in a survey. A Likert scale is the sum of responses to several Likert items. These items are usually displayed with a visual aid, such as a series of radio buttons or a horizontal bar representing a simple scale [14]. The typical Likert scale is a 5- or 7-point ordinal scale used by respondents to rate the degree to which they agree or disagree with a statement. Our Likert scale composed of 5-point ordinal scale.

To ensure validity of the questionnaire, a thorough literature review was conducted on previous outsourcing studies before development of the questionnaire. The literature review covered questionnaires used in previous studies. The draft questionnaire was shared with experts in the field for their review and comments after which the questionnaire was updated. The updated draft questionnaire was pre-tested in three hospitals to ensure the relevance and comprehensibility of the questions after which it was further updated before data collection from the study sample. As part of data analysis, we also calculated the Cronbach alpha (α) to test for the reliability of our study instrument. Cronbach’s alpha is the most widely used objective measure of reliability because of its ease of use in comparison to other estimates (e.g. test retest reliability estimates) as it only requires one test administration. Cronbach’s alpha measures the internal consistency of a test or scale and is expressed as a number between 0 and 1 [15]. The constructs considered in our questionnaire all had a Cronbach alpha greater than 0.7 indicating that the questionnaire used in our study was reliable.

2.4. Data Collection

Trained research assistants were used to distribute the questionnaires to the selected hospitals between April 2015 and September 2015. Respondents included either the hospital medical superintendent or hospital administrator. These are the top managers of the hospitals.

The response rate based on the initial sample list was 90% which is considered to be very good. However, given the conservative sample size, the non-responding hospitals were replaced with other similar hospitals in order to ensure the minimum sample size of 32 for statistical analysis purposes.

2.5. Data Management and Analysis

The filled questionnaires were verified, cleaned and coded once received from the research assistants. The collected data was initially entered into a Microsoft Excel data base and then exported to SAS 9.3 for statistical analysis.

Outsourcing was dichotomized on the basis of whether a hospital outsources one or more of the support services it needs. We conducted two forms of analysis. The first analysis focused on comparing outsourcing practices among the hospitals that were outsourcing based on the hospital characteristics (size, location, ownership *etc*). We used Contingency tables for this analysis. The second analysis focused on comparing the different study variables across hospitals that reported to be outsourcing and those that were not outsourcing. The different study variables related to the outsourcing practices of the hospital, hospital manager's attitudes and perceptions towards outsourcing, characteristics of the outsourced services and hospital characteristics. We applied Wilcoxon-Mann-Whitney tests for this analysis. The test was ideal given the ordinal nature of our dependent variable (Likert items), the categorical nature of our independent variables (outsourcing status) and the independence of observations between the two groups of hospitals (those outsourcing and those not outsourcing). We assumed that the Likert scores for both groups were not normally distributed which warranted use of a non-parametric test like the Wilcoxon-Mann-Whitney test [16].

3. RESULTS

3.1. Sample Characteristics

Our sample comprised of 32 general hospitals. More than half of the hospitals (n=18; 57%) were Non-governmental hospitals while the rest were public hospital owned by the Ministry of Health (n=14; 43%). Most of the hospitals (n=19; 59%) were located in rural areas while 41% (n=13) were urban hospitals.

One respondent from each hospital participated in the study. Of the 32 participants, slightly more than half (n= 17; 53%) were Medical Superintendents, while the rest were Hospital Administrators (n=15; 47%).

The average hospital in our study sample had 137 hospital beds and 135 hospital staff (Table 1).

Table 1. Sample characteristics.

Sample Characteristics	Number (N)	Percentage (%)	
Hospitals surveyed	32		
Hospital ownership/type			
MOH	14	44%	
NGO	18	57%	
Hospital location			
Rural	19	59%	
Urban	13	41%	
Total number of respondents	32		
Title of respondents			
Medical Superintendent	17	53%	
Hospital Administrator	15	47%	
Availability of business/strategic plan			
Yes	21	70%	
No	9	30%	
Strategic plan includes outsourcing (n=18)			
Yes	13	72%	
No	5	28%	
Sample characteristics	Average	Maximum	Minimum
Hospital Beds (N=31)	137	284	25
Hospital staff (N=30)	135	254	46
Staff break down			
Clinical (N=29)	82	166	7
Non-clinical (N=29)	54	188	13
Annual budget for 2013-UGX (N=25)	1,007,536,98	3,509,805,896	131,000,000

3.2. Prevalence and Duration of Outsourcing

Most of the hospitals surveyed (n=23; 72%) reported to be outsourcing one or more of the support services required to run the hospitals. The most frequently outsourced support service was cleaning services (n=18; 78% of hospitals)

followed by IT services (n=12; 52% of hospitals). The least outsourced service was laundry services (n=4; 17% of hospitals).

On average, IT services and security services had been outsourced for the longest duration (45 months) while catering services had been outsourced for the shortest duration (18 months).

3.3. Differences in Characteristics Among Outsourcing Hospitals

We investigated if there is a difference in the characteristics of hospitals that reported to be outsourcing one or more support services. The hospital characteristics considered included hospital ownership, location, hospital size (using number of beds as a proxy), hospital staffing (considering the number of non-clinical staff) and hospital budget for the year 2013. We used Contingency tables with Odds Ratios for this analysis. The results are shown in Table 2.

Table 2. Differences in characteristics among Outsourcing hospitals (N=32).

Characteristic	Number	Outsourcing Number (Percentage)	Odds Ratios	P
Ownership				
MOH	14	11(79%)	0.5455	0.2409
NGO	18	12 (67)		
Location				
Rural	19	10 (53%)	----a	0.0033*
Urban	13	13 (100%)		
Hospital Size				
Large(>100 beds)	26	18 (69%)	0.5625	0.3875
Small (<100 beds)	5	4 (80%)		
Staffing (Non-clinical)				
Highly staffed (>50 staff)	13	7 (53%)	0.2188	0.0593
Lowly staffed (<50 staff)	19	16 (84%)		
Annual Budget (2013)				
High budget (>500M UGX)	13	7 (54%)	----a	0.2188
Low budget <500M UGX	19	16 (84%)		
*p<0.05				
----a Odds ratios could not be calculated due to small numbers				

The results indicate that there is a significant difference in the proportion of rural and urban hospitals outsourcing one or more support services (p=0.0033). The impact of the other considered hospital characteristics like ownership is not significant (p>0.05).

3.4. Management Perceptions and Out Sourcing

Table 3 presents the number of managers who agree or strongly agree with statements related to benefits of outsourcing, outsourcing risks, characteristics of services that need to be outsourced and outsourcing barriers per outsourcing status (outsourcing or not outsourcing). Some of the items in the table are Likert scale items derived from a combination of various Likert items whereas others are standalone Likert items.

Table 3. Managers perception about outsourcing benefits, risks and barriers to outsourcing by outsourcing status.

	Outsourcing	Not Out Sourcing	Z	P
Perception about out sourcing benefits				
Cost management (Likert scale)	21	9	0.3906	0.6990
Greater focus (Likert scale)	21	9	0.4720	0.6405
Flexibility (Likert scale)	21	9	0.0000	1.0000
Access to external expertise/investment or innovation (Likert scale)	21	9	0.3691	0.7147
Perception about out sourcing risks				
Strategic risks (Likert scale)	21	9	1.9213	0.0642
Commercial risks (Likert item)	22	9	1.5763	0.1150
Operational risks(Likert scale)	21	9	0.2194	0.8279
Perception about service characteristics				
Criticality (Likert item)	23	9	-0.4563	0.6482

(Table 3) *contd.....*

	Outsourcing	Not Out Sourcing	Z	P
Frequency of need (Likert item)	23	9	-1.1727	0.2409
Availability(Likert item)	23	9	-1.0454	0.2958
Measurability (Likert item)	23	9	-0.7807	0.4350
Perception about outsourcing barriers				
Organizational/internal barriers (Likert scale)	21	9	-0.2975	0.7682
External/Contextual barriers (Likert item)	21	9	0.7252	0.4683

For the analysis, non-parametric tests, the Wilcoxon-Mann-Whitney tests were used to calculate the z statistic and the associated p-values (two-sided p-values). The analysis was based on the null hypothesis that “there is no difference in the distribution of combined scores between the two sides of the independent variable (outsourcing status *i.e.* outsourcing or not outsourcing)

The results indicate that there are no significant differences ($p > 0.05$) in the hospital managers perceptions about the benefits of outsourcing, outsourcing risks, characteristics of services that need to be outsourced and outsourcing barriers per outsourcing status (outsourcing or not outsourcing).

Further analysis of the variations in management opinions and perceptions among outsourcing and non out sourcing hospitals using Likert items (instead of Likert scales) confirms that there are no significant differences in hospital managers opinion and perceptions towards outsourcing based on outsourcing status (Table 4)

Table 4. Variations in management opinions and perceptions regarding various aspects of outsourcing among outsourcing and non-out sourcing hospitals Managers.

	Out Sourcing N=23	Not Outsourcing N=9	Odds Ratio	P
	Agree/Strongly agree (n, %)	Agree/Strongly agree (n, %)		
Opinion and knowledge about out sourcing				
Outsourcing is one approach that can be used by hospital management to improve performance (n=32)	22 (96%)	8 (89%)	0.3636	0.4173
Know at least one hospital that is currently outsourcing one or more of the services it requires (n=29)	20 (100%)	8 (89%)	0.0000	0.3103
The Public Procurement and Disposal Acts (2003) and the MOH Public Private Partnership (PPP) policy 2009, can be used as a basis by hospitals to outsource (n=25)	16 (100%)	8 (89%)	0.0000	0.3600
Perception about out sourcing benefits				
Out sourcing can be used by a hospital to achieve cost saving and to control costs (n=27)	16 (89%)	8 (89%)	1.0000	0.4708
Outsourcing enables the hospital to convert fixed costs to variable costs linked with predefined outputs by the contractor (n=23)	16 (94%)	6 (100%)	----a	0.7391
Outsourcing can be used by a hospital to achieve improvement in productivity of its operations (n=27)	18 (100%)	9 (100%)		
Out sourcing enables hospital Management to focus resources on the core business of looking after patients (n=30)	19 (89%)	8 (90%)	0.8421	0.4655
Outsourcing can be used by a hospital to be able to deliver improved service to the patients (n=28)	19 (95%)	9 (100%)	----a	0.7143
Outsourcing can enable the hospital to improve its internal process through restructuring, re-engineering, standardization of processes service (n=26)	17 (94%)	8 (100%)	----a	0.6923
Outsourcing provides hospital management with flexibility and convenience for scaling up services reducing risk of poor service and limited or over capacity (n=25)	17 (94%)	7 (100%)	----a	0.7200
Outsourcing enables the hospital to gain quick and continuous access to the latest technological developments <i>e.g.</i> equipment (n=28)	19 (95%)	8 (100%)	----a	0.7143
Outsourcing can be used by the hospital to be innovative, expand service and rapidly develop new ways of delivering services (n=27)	17 (89%)	8 (100%)	----a	0.4872
Out sourcing allows the hospital to bring in vendors with newer capabilities and knowledge which can provide competitive advantage over other hospitals (n=27)	19 (95%)	7 (100%)	----a	0.7407
Perception about out sourcing risks				

(Table 4) contd....

	Out Sourcing N=23	Not Outsourcing N=9	Odds Ratio	P
	Agree/Strongly agree (n, %)	Agree/Strongly agree (n, %)		
Outsourcing could lead to regulatory violations (e.g. violation of procurement act, corruption) and creation of legal obligations which may not be favorable to the hospital (n=30)	21 (95%)	6 (75%)	0.1429	0.1517
Out sourcing by the hospital can lead to over reliance on vendors which may be risky to the hospital in case the vendor performs poorly (n=29)	20 (95%)	6 (75%)	0.1500	0.1609
Out sourcing can lead to loss of confidentiality and possible breach of privacy since the contractor gets to know the internal operations of the hospital (n=27)	16 (89%)	6 (67%)	0.2500	0.1592
Outsourcing by the hospital creates complexity in vendor relationship management (n=25)	10 (56%)	3 (43%)	0.6000	0.2945
Out sourcing by the hospital leads to increased management complexities since it requires special skills to successfully outsource and manage the vendor (n=27)	11(61%)	6 (67%)	1.2727	0.3169
Sometimes outsourcing by the hospital may not lead to the expected deliverables/benefits (n=31)	19 (86%)	7 (78%)	0.5526	0.3263
----a Odds Ratios can't be calculated due to small numbers				

3.5. Outsourcing Practices and Hospital Characteristics

We investigated if there is a difference in outsourcing practices among currently outsourcing hospitals depending on the hospital characteristics. We used Contingency tables with Odds Ratios for this analysis. The hospital characteristics were divided into extrinsic factors (location, ownership) these being beyond the immediate control of the hospital managers, and intrinsic factors (hospital size and staffing) these being within some control of the hospital managers. The hospital size was related to the bed capacity of the hospital and only non-clinical staff members were considered.

As can be seen from Table 5, there are no significant differences in the reasons for outsourcing between MOH and NGO hospitals that were outsourcing; and the procurement method used to outsource (p>0.05 for all items). Similarly, there is no significant difference in the internal process before deciding to outsource between MOH and NGO hospitals.

Table 5. Difference in outsourcing practices based on extrinsic hospital characteristics.

	Ownership				Location			
	NGO (N=12)	MOH (N=10)	OR	P	Rural (N=9)	Urban (N=13)	OR	P
	n (%)	n (%)			n (%)	n (%)		
Reason for outsourcing								
To save costs n=22	8 (67%)	2(20%)	8.000	0.0344	4 (44%)	6 (46%)	1.0714	0.3344
To enable the hospital focus on servicing patients n=22	6 (50%)	6 (60%)	0.6667	0.3001	5 (56%)	7 (54%)	0.9333	0.3344
Gain quality service from another firms' expertise n=22	11 (92%)	4 (40%)	16.500	0.0148	5 (56%)	10(77%)	2.6667	0.2113
To increase flexibility by using a contracted work force n=22	2 (17%)	5 (50%)	0.2000	0.0975	3 (33%)	4(31%)	0.8889	0.3522
Wanted to reduce employee size n=22	2 (17%)	4 (40%)	0.3000	0.1858	3 (33%)	3 (23%)	0.600	0.3220
Internal process before deciding to out source								
None, decision was made intuitively n=22	0 (0%)	3(10%)	0.000	0.0779	2 (22%)	1 (8%)	0.2917	0.3039
Analysis of the importance level of the activity to the hospital's mandate n=22	8 (67%)	4 (10%)	3.000	0.1608	5 (56%)	7(54%)	0.9333	0.3344
Analysis of the relative capability of the hospital to provide the service Vs outside suppliers n=22	9 (75%)	7 (70%)	1.2857	0.3538	6 (67%)	10 (73%)	1.6667	0.3220
Market analysis for the services to be outsourced n=22	6 (50%)	2 (20%)	4.000	0.1300	4 (44%)	4 (31%)	0.5556	0.2817
Determination of the appropriate strategic sourcing options n=22	5 (42%)	3 (30%)	1.6667	0.2972	3 (33%)	5 (38%)	1.2500	0.3381
Determination of the relationship strategy with supplier n=22	1 (8%)	2 (20%)	0.3636	0.3506	1 (11%)	2 (15%)	1.4545	0.4558
Determination of how the relationship with supplier will be established, managed, monitored and evaluated n=22	4 (33%)	2 (20%)	2.000	0.2985	2 (22%)	4 (31%)	1.5556	0.3450
Procurement method used to select out sourcing vendor								
Open domestic bidding n=20	6 (55%)	6 (67%)	0.600	0.3081	5 (56%)	7 (64%)	1.400	0.3301
Restricted domestic bidding n=20	1 (9%)	2 (22%)	0.350	0.3474	1 (11%)	2 (18%)	1.7778	0.4342
Through a Request for Proposals n=20	1 (9%)	1 (11%)	0.800	0.5211	0 (0%)	2 (18%)		0.2895
Direct procurement					1 (11%)	0 (0%)		0.0715
Challenges faced during the out sourcing process								

(Table 5) *contd....*

	Ownership				Location			
	NGO (N=12)	MOH (N=10)	OR	P	Rural (N=9)	Urban (N=13)	OR	P
	n (%)	n (%)			n (%)	n (%)		
Limited in house capacity to outsource n=21	4 (36%)	4 (40%)	0.8571	0.3406	4 (44%)	4 (33%)	0.625	0.3065
Limited number of service providers n=21	8 (73%)	4 (40%)	4.000	0.1179	8 (89%)	4 (33%)	0.0625	0.0152*
Contractual issues n=21	4 (36)	6 (60%)	0.381	0.1965	1 (11%)	9 (35%)	24.000	0.0056*
Law/owning authority could not allow it and had to negotiate n=21	1(9%)	0 (0%)	0.500	0.5238	1 (11%)	0 (0%)	0.000	0.4286
Political interference in the outsourcing process n=21	1 (9%)	7 (70%)	0.0429	0.0065*	3 (33%)	5 (42%)	1.4286	0.3269
Availability of a system to continuously monitor the outsourcing program								
Yes	9 (82%)	6 (60%)	3.000	0.2128	8 (89%)	7 (58%)	0.175	0.1314
Aspects of outsourcing program being monitored								
Supplier performance n=20	8 (73%)	5 (55%)	2.1333	0.2682	7 (78%)	6 (55%)	0.3429	0.2146
Cost effectiveness n=20	6 (55%)	6 (67%)	0.600	0.3081	7 (78%)	5 (45%)	0.2381	0.132
Continued feasibility of outsourcing n=20	3 (27%)	1 (11%)	3.000	0.3065	3 (33%)	1 (9%)	0.200	0.1907
Continued need for outsourcing n=20	4 (36%)	2 (22%)	2.000	0.3065	5 (56%)	1 (9%)	0.0800	0.0358*
Monitoring strategies employed								
Regular meetings with supplier to review performance n=20	7 (64%)	7 (78%)	0.500	0.3065	7 (78%)	7 (64%)	0.500	0.3065
Regularly tracking the costs of the sourced services n=20	5 (45%)	5 (56%)	0.6667	0.3151	5 (56%)	5 (45%)	0.6667	0.3151
Regular satisfaction surveys without sourced services among staff and clients n=20	6 (55%)	3 (33%)	2.400	0.2311	5 (56%)	4 (36%)	0.4571	0.2476
Market surveys to determine changes in supplier availability and capabilities n=20	3 (27%)	3 (33%)	0.7500	0.3576	3 (33%)	3 (27%)	0.3576	0.7500
Benchmarking our out sourced service quality with quality of the service in the best hospitals in the country(n=20)	2 (18%)	4 (44%)	0.2778	0.1788	1 (11%)	5 (45%)	6.6667	0.1073
Continuous internal analysis regarding importance of the outsourced service to hospital performance n=20	4 (36%)	4 (44%)	0.7143	0.3301	5 (56%)	3 (27%)	0.300	0.1650
Continuous internal capability analysis to deliver the outsourced service(n=20)	3 (27%)	4 (44%)	0.4688	0.2682	4 (44%)	3 (27%)	0.4688	0.2682

*p<0.05

However, there were significant differences in some of the reported challenges in the outsourcing process depending on hospital ownership and location. Rural hospitals were more likely to report challenges with the available number of suppliers during the outsourcing process compared to their urban counterparts ($p=0.0152$).

On the other hand, urban hospitals were more likely to report challenges with contractual issues during the outsourcing process compared to their rural peers ($p=0.0056$).

Hospitals owned by MOH were more likely to report political interference in the outsourcing process compared to NGO hospitals ($p=0.0065$). However, there were no significant differences in outsourcing practices based on hospital size and staffing ($p>0.05$ for all items) (Table not shown).

Regarding outsourcing monitoring, there was no significant difference in availability of a monitoring system and the monitoring strategies employed between the studied hospitals based on the extrinsic hospital characteristics considered (location, ownership). However, rural hospitals were more likely to monitor the continued need for outsourcing compared to their urban counterparts ($p=0.0358$).

4. DISCUSSION

Despite its potential benefits that include better focus for the outsourcing organization and cost reduction [17 - 19], benefit from supplier investment and invention [20], increased flexibility and access to technology [21 - 23] and access to external competencies [24, 25]; there is limited knowledge about outsourcing by hospitals in Uganda as a strategic management tool for improving hospital performance. This limits any potential efforts to increase adoption or effectiveness of outsourcing by hospitals in Uganda where appropriate and feasible. Our study tries to address this gap with a focus on the factors associated with outsourcing decisions and practices by hospitals in Uganda.

The findings of the study add to the existing body of knowledge and understanding of the subject of outsourcing, particularly in the health sector in developing countries, and specifically in the context of hospitals in Uganda. The study findings support and enrich theories and models of outsourcing that take into account attitudes and perceptions of

managers involved in making the outsourcing decision.

Most of the hospitals in our study ($n=23$; 72%) reported to be outsourcing one or more of the support services required to run the hospitals. Similar studies in other contexts have found outsourcing of support services by hospitals to be common. In a study conducted in Turkey, for example, 84% of hospitals were found to be outsourcing at least one support service [26]. In a Taiwanese study, 95% of studied hospitals were found to be outsourcing support services [27]. In an Israel study, 94% of hospitals were found to be outsourcing. However, these studies were conducted in a regional different context than this study (out of Africa).

Regarding hospital characteristics and their influence on outsourcing, our findings indicate that hospital location has a significant influence on outsourcing. The results indicate that there is a significant difference in the proportion of hospitals outsourcing and those not outsourcing between rural and urban hospitals ($p=0.0033$). This may be related to availability of vendors, with rural areas being specifically challenged. Indeed, our findings indicate that rural hospitals were more likely to report challenges with the available number of suppliers during the outsourcing process compared to their urban counterparts ($p=0.0152$).

The impact of the other considered hospital characteristics like ownership is not significant ($p>0.05$). However, in contrast with this finding, a study in Taiwan found that not for profit hospitals (NGO hospitals) had a higher tendency to outsource the services considered in the study (utility maintenance and guard services) than private and public hospitals [27].

Contrary to what we had expected based on our conceptual framework, our findings indicate that hospital Managers' perceptions about benefits of outsourcing, outsourcing risks, characteristics of services that need to be outsourced and outsourcing barriers have no influence on the outsourcing decision of the hospitals in our study. This can be attributed to the fact that most managers in our study already have a favorable attitude towards outsourcing. Generally, the hospital managers from both outsourcing and non-outsourcing hospitals strongly agreed or agreed with the various documented benefits of outsourcing, with at least 79% of the managers agreeing or strongly agreeing with the each of the indicated benefits.

The finding that rural hospitals were more likely to monitor the continued need for outsourcing compared to their urban counterparts ($p=0.0358$) may be related to the earlier reported fact that rural hospitals were more likely to report a challenge of limited number of service providers and so would be more motivated if continuously assess if indeed outsourcing is still required to justify any continued effort and cost of seeking out the few available vendors who are more likely to be expensive.

4.1. Study Limitations and Recommendations for Future Research

A key limitation of our study was the small sample size used. As earlier indicated for a population size of 92 hospitals, the ideal sample size was calculated to be 47. However, given the enormous cost of collecting data from 47 hospitals all over the country, a sample size of 32 was eventually decided upon. This is the minimum required sample size for any meaningful statistical analysis. However due to response rates and completeness of the questionnaires, for some analyses the sample size was less than 32.

Data from the hospital managers was obtained using highly structured questionnaire based on 5-point Likert scale which was self-administered, so, it was not possible to verify or probe the responses provided by the participants.

Future research based on a qualitative approach is necessary to further explore the responses provided by respondents in our study and would help enrich the findings of our study. Also, a further study of the motivations, practices and barriers to outsourcing by the hospitals in our sample would help generate useful information to help design policy guidelines to increase the adoption and effectiveness of outsourcing by hospitals where appropriate and feasible.

CONCLUSION

The findings of our study provide some insight into the factors that influence the outsourcing decision by hospital managers in Uganda. The study reveals that hospital location has a significant influence on outsourcing. However, hospital Managers perceptions about benefits of outsourcing, outsourcing risks, characteristics of services that need to be outsourced and outsourcing barriers have no impact on the hospital's outsourcing decision. This study adds to the incipient literature about outsourcing in the health sector in Uganda.

LIST OF ABBREVIATIONS

IT	=	Information Technology
MOH	=	Ministry of Health
NGO	=	Non Government Organization
SAS	=	Statistical Analysis Systems

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical clearance for the study was obtained from the University of South Africa (UNISA) ethics committee in South Africa, the Lacor Hospital Ethical review board in Uganda, and the Uganda National Council of Science and Technology. Permission to conduct the study was obtained from the Ministry of Health in Uganda. Written informed consent was also obtained from the hospital managers who participated in the study.

HUMAN AND ANIMAL RIGHTS

No Animals/Humans were used for studies that are base of this research.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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