

## Determining the effect of sub-contractor's expertise on service delivery in public hospitals in Nakuru County

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### Cite this article in APA

Kamau, N., Gesimba, P., & Gumboh, J. (2022). Determining the effect of sub-contractor's expertise on service delivery in public hospitals in Nakuru County. *Journal of business and entrepreneurship*, 1(1), 8-16. <https://doi.org/10.51317/jbe.v1i1.289>



A publication of Editon Consortium Publishing (online)

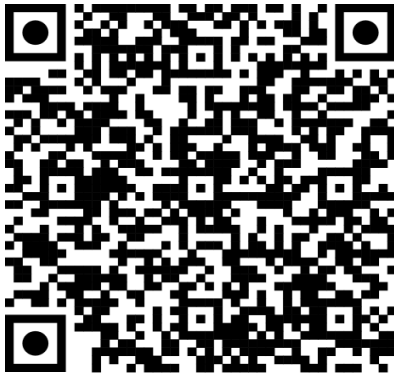
### Article history

Received: 23.08.2022

Accepted: 13.10.2022

Published: 18.10.2022

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### Abstract

This study aimed to determine the effect of sub-contractor expertise on service delivery in public hospitals in Nakuru County. The agency theory guided the study. Both cross-sectional and explanatory research designs were adopted. The research was concerned with collecting data from procurement officers, heads of departments, and medical superintendents of public hospitals operating in Nakuru County. A census design was adopted where all 80 staff were projected to participate in the study. The study was delimited to primary data collected from the respondents using a structured questionnaire. The research instrument was pilot tested with the primary objective of assessing its validity and reliability before it was employed in collecting data for the full-scale study. The collected data were analysed with the assistance of the Statistical Package for Social Sciences. Multicollinearity tests were conducted, and these were tested using variance-inflated factors (VIF) and Tolerance (T), where the two parameters were reciprocal to each other. The data were analysed using descriptive and inferential statistics. The effect of each of the aforesaid aspects of subcontracting on service delivery was as well established to be statistically significant. Professionalism, competence, specialised expertise, and experience were concluded to be essential ingredients considered by these hospitals in selecting and engaging subcontractors. The study also concluded that the expert subcontractors had a statistically significant effect on service delivery in public hospitals in Nakuru County. It is recommended that there should be clear policies on various aspects of expertise subcontracting and contracting in the public health sector.

**Key terms:** Sub-contracting, sub-contractor expertise, service delivery.

## INTRODUCTION

The core objective of public entities is to ensure that quality services are delivered to the public. For instance, the delivery of quality health services is an essential component of universal health care (UHC). The emphasis on quality health services is premised on the fact that such services go beyond alleviation and prevention of human suffering to ensuring healthier societies and improving both the human capital and economies (World Health Organization, Organisation for Economic Cooperation and Development, World Bank, 2018). Moreover, service delivery refers to attending to the target group's needs with regard to a given context (for instance, healthcare in the case of hospitals). The outcomes or metrics that can be employed to measure service delivery in health facilities are safety, effectiveness, efficiency, timeliness, people-centeredness, equity, and integration of care (WHO, OECD, World Bank, 2018).

The primary purpose of public health facilities is to deliver quality health care to the public. The delivery of these services is evaluated on key indicators, namely availability of equipment, drugs and infrastructure, presence of health workers and their respective caseload, diagnostic accuracy, clinical guidelines adherence, and management of medical complications such as maternal or neonatal complications (World Bank, 2013). However, service delivery in Kenya's public health sector does not match the expectations to a considerable extent (the Republic of Kenya, 2018). For instance, despite the availability of requisite infrastructure, there is inadequate staffing and underutilisation of health facility infrastructure in all counties. Other key deficiencies witnessed by public hospitals at the county level include very low (less than 25%) availability of neurological care, mental care, blood transfusion, palliative care, rehabilitation care, and care for various types of cancer (the Republic of Kenya, 2018).

These statistics underline the challenges public hospitals face in delivering health care services in Kenya. Reports indicate that KEMSA, the largest organisation in charge of procurement, warehousing, and distribution of health equipment and drugs to public health facilities in Kenya, has faced apparent challenges that border on the entities it subcontracts (Kanyangi, 2018). Consequently, the services rendered

by public hospitals have been compromised. Hitherto, the empirical studies conducted have fallen short of relating subcontracting to services delivered by public health facilities in Kenya. A case in point is a study, which examined the influence of labour-only subcontracting on procurement performance in public hospitals in Nakuru County (Ngigi, 2021) which did not establish the influence of subcontracting on service delivery. Another study evaluated the quality-of-service delivery in the private sector in Kenya (Mohamoud & Mash, 2020) yet failed to link service delivery to subcontracting besides focusing on the private sector as opposed to public hospitals. This implies that there exist apparent research gaps, which need to be bridged. Thus, it was imperative to conduct this study that purposed to establish the effect of subcontracting on service delivery by public hospitals in Kenya, with a specific focus on Nakuru County.

## LITERATURE REVIEW

According to Shiu-tong and Luu (2008), subcontractor expertise is described as the skills of a certain exchange for which specific tools, equipment and interaction skills have been acquired. As such, the expertise of the subcontractor is an issue of imperative interest. The subcontractor should be someone more qualified than the contractor. This form of subcontracting involves a high degree of specialisation, and where capabilities of the subcontractors are based on customer-specific decisions (Chaillou, 2016).

A study conducted in Nigeria among small and medium-sized firms evaluated the role of a subcontracting innovation strategy (Nwokocha et al., 2019). The objective was to examine the subcontracting innovation strategy. Innovativeness requires expertise. A sample of 113 SMEs was involved in the study. Pertinent data were collected through field observations as well as a questionnaire. The data were analysed using means, standard deviations, and regression. The study identified seven dimensions, which large-scale firms used to subcontract small businesses. The study found that the relationship between large companies and SMEs in the field of subcontracting focused on product-related cooperation and development. There was a contextual gap in that the study did not focus on health facilities.

A study conducted in Nairobi, Kenya, by Biketi et al. (2017) focused on the factors that enable effective relations between contractors and subcontractors. The specific objective was to examine the expertise strategies demonstrated by the subcontractors. A comparative research design was adopted where a total of 70 companies were involved in the study. The study findings showed that both the contractors and the subcontractors prioritised compliance with the laid down regulations. Accordingly, it was concluded that expertise and regulatory compliance were the main factors used by general entrepreneurs to select suitable subcontractors. On the other hand, the subcontractors are selected on the basis of their experience, ability, finances and credibility. Despite addressing the expertise of subcontractors, the study fell short of linking the said expertise to service delivery.

Another local study carried out by Muinde (2012) investigated the effect of subcontractor experience on the success of construction projects. The objectives were to analyse the fundamental factors that affect the relations between major contractors and speciality subcontractors and also to assess their effect on the execution of construction projects. The study used a descriptive survey research design. The study findings indicated that most contractors depended on subcontractor expertise to complete their projects and that subcontractor procurement and management had a major effect on project performance. It was also revealed that subcontractors performed the bulk of the work. However, the study did not relate subcontractors' expertise to service delivery.

The subcontractors (agents) may lack the expected expertise to execute the subcontracted functions/operations/tasks, to the chagrin of the contractors (principals). Furthermore, due to vested interests (for instance, to maximise their returns), the subcontractors may compromise the quality of goods and services they are subcontracted to deliver to public health facilities, an issue which is bound to bring about conflict between them and the subcontractors engaged by the hospitals. This is because the subcontractors are answerable to the contractors, while the latter are answerable to the hospital management. There is also the likelihood of the subcontractors inflating the cost of goods and services procured from them or through them to maximise their returns. Consequently, this move may orchestrate conflict between them and the contractors, especially when the latter fail to realise their expected returns from their contract with public hospitals. In the event of a conflict between the subcontractors and the contractors engaged by the aforementioned health facilities, the efficiency of the former in delivering the required goods and/or services is likely to be considerably compromised.

## RESULTS AND FINDINGS

### Subcontractors' Expertise

The views of the procurement officers, HODs, and medical superintendents on the expertise of subcontractors engaged by public hospitals in Nakuru County were examined. The results of the analysis of these views are presented in Table 1.

**Table 1: Descriptive Statistics for Subcontractors' Expertise**

	SD (%)	D (%)	U (%)	A (%)	SA (%)	Mean	Std. Dev
The high expertise of sub-contract help in the delivery of product and service	0	0	0	31 (45.6)	37 (54.4)	4.54	.502
The competencies of the subcontractors are a major factor considered when our hospital is engaging them.	0	0	0	39 (57.4)	29 (42.6)	4.43	.498
Our hospital demand absolute professionalism from the subcontractors.	0	0	1 (1.5)	48 (70.6)	19 (27.9)	4.26	.477
The subcontractors engaged by the out hospital are highly skilled.	0	0	0	51 (75.0)	17 (25.0)	4.25	.436

Sub-contracting is relevant when a contract demands special consultancy services	0	1 (1.5)	11 (16.2)	32 (47.1)	24 (35.3)	4.16	.745
Sub-contracting is typically used when the main contractor has insufficient specialised expertise to meet the contract requirements	1 (1.5%)	1 (1.5)	11 (16.2)	21 (30.9)	34 (50.0)	4.07	.816
Subcontractors are selected based on their experience in the niche (field) of interest.	0	9 (13.2)	0	42 (61.8)	17 (25.0)	3.99	.889
So far, the engaged subcontractors have offered superior hospital performance.	1 (1.5)	7 (10.3)	0	15 (22.1)	45 (66.2)	3.97	.880
Sub-contracting is commonly applied when contract implementation demands a specialist to meet the expectations of the client.	2 (2.9)	8 (11.8)	0	40 (58.8)	18 (26.5)	3.94	1.006
Due to their experience majority of sub-contractors are able to deliver products and services as per the set quality standards	0	12 (17.6)	0	37 (54.4)	19 (27.9)	3.93	.997
<b>Aggregate mean</b>						<b>4.15</b>	

In accordance with the results demonstrated in Table 1, it was generally strongly agreed (mean = 4.54; std dev = 0.454) that the high expertise of subcontractors helped in the delivery of products and services to the public hospitals. Furthermore, in respect of all the other issues on subcontractors' expertise, the respondents were generally in agreement (mean  $\approx$  4.00), and their views were largely similar (std dev < 1.000), except for one proposition. For instance, all the respondents (100.0%) admitted that the competence of the subcontractors was a major factor that was considered when the hospitals were engaging them; and that the engaged subcontractors were highly skilled. These results are in conjunction with the findings of a local study, which revealed that ability (capacity), credibility, and financial capacity were some of the issues considered when selecting subcontractors (Biketi et al., 2017).

Most of the respondents at least agreed that the hospitals demanded absolute professionalism from the subcontractors (agreed/strongly agreed = 98.5%); subcontracting was relevant when a contract demanded special consultancy services (agreed/strongly agreed = 82.4%); subcontracting was typically employed when the main contractor had insufficient specialised expertise to meet the contract requirements (agreed/strongly agreed = 80.9%); and that subcontractors were selected based on their experience on the niche of interest (agreed/strongly agreed = 86.8%). These results support the findings of

an earlier local study, which indicated that most contractors relied on subcontractors' expertise to complete the projects they had been contracted to undertake (Muinde, 2012).

Although the vast majority opined that the engaged subcontractors had hitherto offered the public hospitals superior performance (agreed/strongly agreed = 86.3%), 11.8 per cent of the respondents refuted the assertion. Despite the fact that most of the respondents generally admitted that subcontracting was commonly applicable when contract implementation demanded a specialist to meet clients' expectations (mean = 3, the proposition attracted quite divergent views (std dev = 1.006). According to a cumulative 82.3 per cent of the respondents, most subcontractors can deliver products and services as per the set quality standards as a result of their experience. Generally, it was revealed that the respondents agreed with all the issues raised pertinent to the expertise of subcontractors (aggregate mean = 4.15). The results were interpreted to reveal that the medical superintendents, heads of departments, and procurement officers were largely unanimous regarding the subcontractors' expertise.

## Correlation Analysis

The Spearman rank correlation analysis was employed to establish the relationship between subcontracting

expertise and service delivery. The results of this effect are presented in Table 2.

**Table 2: Spearman Rank Correlation Matrix for Subcontracting Expertise and Service Delivery**

Spearman's rho	Subcontractors' Expertise	Correlation Coefficient	1.000				
		Sig. (2-tailed)	.				
	Service Delivery	Correlation Coefficient	.446**	.379**	-.339**	.342**	1.000
		Sig. (2-tailed)	.000	.001	.005	.004	.
	N	68	68	68	68	68	

**\*\*.** Correlation is significant at the 0.01 level (2-tailed).

**\***. Correlation is significant at the 0.05 level (2-tailed).

As shown in Table 2, the correlation between subcontractors' expertise and service delivery was found to be positive, moderately, and statistically significant ( $r_s = 0.446$ ;  $p = 0.000$ ) at  $p$ -value = 0.05. This means that increasing the expertise of subcontractors was likely to have a moderate and substantial enhancement in the delivery of services offered by public hospitals in Nakuru County. These results were in support of earlier empirical findings, which indicated

that the expertise of subcontractors influenced the performance of projects (Muinde, 2012).

### Simple Linear Regression Analysis

The essence of simple linear regression was to establish the influence of each aspect under subcontracting expertise on service delivery in public hospitals in Nakuru County. The pertinent results are presented in Table 3 to Table 4.

**Table 3: Model Summary of Subcontractors' Expertise against Service Delivery**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.515 <sup>a</sup>	.265	.254	.28704

**a. Predictors: (Constant), Subcontractors' Expertise**

According to the results of the coefficient of determination ( $r^2 = 0.265$ ) shown in Table 3, the expertise of subcontractors could explain 26.5 per cent of the variability in service delivery in public

hospitals in Nakuru County. The remaining proportion (73.5%) could be attributed to other factors besides the stated expertise.

**Table 4: ANOVA of Subcontractors' Expertise against Service Delivery**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.964	1	1.964	23.840	.000 <sup>b</sup>
	Residual	5.438	66	.082		
	<b>Total</b>	<b>7.402</b>	<b>67</b>			

**a. Dependent Variable: Service Delivery**

**b. Predictors: (Constant), Subcontractors' Expertise**

The results of F-statistic ( $F_{1, 66} = 23.840$ ;  $p = 0.000 < 0.05$ ) indicate that there was a linear relationship between subcontractors' expertise and service delivery. Therefore, the sample data collected and

analysed fitted the adopted simple linear regression model:  $Y = \beta_0 + \beta_1 X_1 + \epsilon$ . As such, the model was feasible in the analysis of the influence of subcontractors' experience on service delivery.

**Table 5: Regression Coefficients of Subcontractors' Expertise against Service Delivery**

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.606	.643		.942	.350

Subcontractors' Expertise	.755	.155	.515	4.883	.000
<b>a. Dependent Variable: Service Delivery</b>					

The results shown in Table 5 ( $Y = 0.606 + 0.755X_1$ ) indicated that a unit change in service delivery in public hospitals required a 0.755 unit increase in the expertise of subcontractors. According to the t-statistic ( $t = 4.883$ ;  $p = 0.000$ ), the influence of subcontractors' experience on service delivery was found to be statistically significant at  $p$ -value = 0.05. In line with these results, the null hypothesis ( $H_{01}$ : subcontractor's expertise has no statistically significant effect on service delivery in Nakuru County public

hospitals) was rejected. Its alternative was established to be true.

### Multiple Regression Analysis

To assess the combined effect of subcontracting expertise on service delivery in public hospitals, a multiple linear regression analysis was conducted. The pertinent results of this analysis are presented in Table 6, Table 7, and Table 8, respectively.

**Table 6: Model Summary of Subcontracting against Service Delivery**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.615 <sup>a</sup>	.379	.339	.27017
<b>a. Predictors: (Constant), Subcontractors' expertise.</b>				

As shown in Table 6, it was revealed that the general correlation of subcontracting against service delivery was positive and moderately strong ( $R = 0.615$ ). This meant that the four aspects of subcontracting expertise were likely to influence the service delivery of public hospitals in Nakuru County. It was also

established from the coefficient of determination ( $R^2 = 0.379$ ) that subcontracting explained 37.9 per cent of the variability in service delivery. The remaining proportion (62.1%) was attributed to other factors that were not investigated in the current study.

**Table 7: ANOVA of Subcontracting against Service Delivery**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.804	4	.701	9.602	.000 <sup>b</sup>
	Residual	4.599	63	.073		
	Total	7.402	67			
<b>a. Dependent Variable: SD</b>						
<b>b. Predictors: (Constant), Subcontractors' expertise.</b>						

According to the findings shown in Table 7, it is apparent that F-statistic,  $F_{4, 63}(9.602)$ ;  $p = 0.000$  was statistically significant at  $p$ -value = 0.05. As such, the general relationship between subcontracting was linear, as expressed by the expertise. Interpretively, the sample data collected and subsequent analysed

fitted the adopted multiple regression model:  $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$ . Consequently, the aforesaid model was used to establish the influence of the subcontracting variables on service delivery. The results of this effect are presented in Table 8.

**Table 8: Regression Coefficients and Multicollinearity Test of Subcontracting against Service Delivery**

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.076	.879		2.362	.021		
	Subcontractors' Expertise	.571	.162	.389	3.517	.001	.804	1.244

## a. Dependent Variable: Service Delivery

A multicollinearity test was conducted before regressing the subcontracting expertise against service delivery. The rationale of this test was to assess the intercorrelation between the four independent variables to determine their suitability in the multiple regression model. This is informed by the assertion that multicollinearity increases the size of standard errors, compromising the significance of the regression coefficients (Brambor, Clark, & Golder, 2006). Multicollinearity is tested using Variance Inflated Factors (VIF) and Tolerance (T), where the two parameters are reciprocal to each other. The acceptable collinearity threshold is  $VIF \leq 10$  or  $T \geq 0.1$ .

Illustratively, all four independent variables, subcontractors' expertise ( $VIF = 1.244$ ;  $T = 0.804$ ), returned VIF and T values within the acceptable threshold. This is in support of the statement that multicollinearity exists when VIF is higher than 5 to 10 (Kim, 2019). Therefore, the model, in its entirety, passed the multicollinearity test and was applicable without any alterations to the independent variables.

Using the results shown in Table 4.22, the model:  $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$  was substituted thus:  $Y = 2.076 + 0.571X_1 + 0.099X_2 - 0.374X_3 + 0.141X_4$ . Therefore, when all other factors that were not part of this study were held constant, a unit change in service delivery was subject to 0.571 unit changes in subcontractors' expertise. According to these results, it is apparent that the expertise of the contractors ( $\beta_1 = 0.571$ ) was the most important subcontracting aspect, while their quality was the least important ( $\beta_2 = 0.099$ ). It was further established that the effect of subcontractors' expertise on service delivery was statistically significant at  $p\text{-value} = 0.05$ . This was demonstrated by the results of t-statistics in respect of subcontractors' expertise ( $t = 3.517$ ;  $p = 0.001$ ) when linked to service delivery.

The study concluded that subcontractors possessing high-level skills played an important role in the delivery of products and service delivery to public hospitals. The competence of subcontractors was an important consideration when selecting subcontracts, hence one of the major reasons that prompted the surveyed hospitals to engage highly skilled subcontractors. It

was observed that public hospitals considered the competence, professionalism and specialised expertise of subcontractors. In selecting subcontractors, their experience in the niche of interest was also an important consideration.

Moreover, it was established that subcontracting had resulted in the provision of superior performance as well as the delivery of products and services that matched the required quality standards. Therefore, there was the likelihood that enhancing the expertise of subcontractors could result in moderate improvement in service delivery. Consequently, subcontractors' expertise had a statistically significant effect on service delivery hence underling its importance in the procurement process of public health facilities. As such, the pertinent null hypothesis was rejected, and the alternative was taken to be true.

## CONCLUSIONS AND RECOMMENDATIONS

**Conclusions:** Several conclusions were drawn in respect of subcontracting and service delivery in public hospitals. It was concluded that the aforementioned health facilities preferred to promote their staff as opposed to recruiting from external sources. The study also inferred that high-level skills were key among subcontractors regarding service delivery to public hospitals. Professionalism, competence, specialised expertise, and experience were concluded to be essential ingredients considered by these hospitals in selecting and engaging subcontractors. It was also concluded that the expertise of subcontractors substantially affected the service delivery of the public hospitals in Nakuru County.

**Recommendations:** The Ministry of Health, in conjunction with county governments, particularly the departments of health, should always give first priority to internal expertise, skills, qualifications, and experience before considering hiring from external sources individuals to occupy high levels in public hospitals. It is necessary to have clear policies and guidelines on expertise requirements that inform the selection and engagement of contractors and subcontractors in the public health sector in Kenya. The relevant authorities are also advised to ensure that there are guidelines with regard to the capacity of

the subcontractors and contractors to adhere to the | set quality specifications and standards.

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