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Relationship between Technological Advancements and Implementation of Public Private Partnerships Health Care Projects in Meru County, Kenya

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Abstract:

The dynamic demands and challenges associated with the provision of universal health care informed decision in several countries around the world to both devolve and introduce Public Private Partnerships (PPPs) for provision of health care services at local government levels. However, the existence of substandard strategies for the implementation of Public Private Partnerships (PPPs) arrangements in health information technologies has denied citizenry access to fast class health care services. This study investigated the influence of technological advancements on implementation of PPPs healthcare projects in Meru County. The study is anchored on one theory; Transaction Cost Theory. Descriptive survey research design guided the study. Target population was 1,017. A sample size of 309 constituting; 19 Staff at Departments of Health and that of Physical and Economic Planning, 23 Civil Society Organizations' Managers and 267 Health Workers in Public Hospitals. Stratified and Simple random sampling procedures were used to select final subjects. Primary data collected making use of structured questionnaires. Quantitative data was analyzed making use of descriptive statistics while qualitative data was outlined in narratives modeled on themes in the study. The study established that, then on-existence of mHealth applications, electronic health records applications, diagnostics technologies and human resources information systems all through PPP arrangements adversely influenced the implementation of PPPs health information systems projects in the study locale. The study concluded that technological advancements are correlated to the implementation of PPPs arrangements for implementation of health information technologies systems. The study recommends that, county government in partnerships with National government agencies should develop effective PPPs for the implementation of health information technologies systems.

Keywords: County government, devolution, healthcare projects, public private partnerships, technology advancements, health information technologies systems

1. Background to the Study

According to Barnes, (2011) Public Private Partnerships (PPPs) in health are collaborations that incorporate one or two private for-profit companies and one public or non-profit organization in the form of a contract to work towards a common health goal and to share the endeavor and benefits emanating from it. Globally several countries have adopted a devolved health function and some are moving towards PPPs in health as a way of both addressing bottlenecks and enhancing efficiency in delivering this public social service good (Krishna, 2014).

In Peru, Curioso (2015) established that the advancements in Tele health significantly influenced implementation of Public Private Partnerships (PPPs) PPPs for health information systems projects in public hospitals under regional governments' management. In Chile, Taylor et al., (2016) observed the need to effectively adopt strategy execution processes for the successful implementation of PPPs in health information technology projects under regional governments.

In Denmark, Larsen, Sørensen, Petersen and Kjeldsen (2015) established that advancements in health information systems significantly influenced the implementation of Public Private Partnerships (PPPs) in telemedicine projects in public hospitals under the management of regional and municipal governments. In Spain, Serrano, Ferrer and de Rosa Torner, (2009) reported that advancements in health information technologies significantly influenced the implementation of PPPs for diagnostic technologies, electronic health records applications and human resources for health information system in a public hospital under the management of an Autonomous Community (A.C).

In South Africa, Kula and Fryatt (2014) established that technological advancement positively influence the implementation of PPPs in various health projects; installation of medical equipment, human resources management information systems (HRIS) and Electronic Health Records (EHR) by provincial governments. In their study, Isabalija, Mayoka, Rwashana and Mbarika (2011) reported that technological advancements significantly influenced the implementation of PPPs for the provision of telemedicine a type of health information technology at devolved units of governance in Uganda.

2. Statement of the Problem

Though devolution of power in Kenya was intended to bring public social services closer to the citizenry, County Governments charged with both the responsibility of implementation and management of projects that would bring the realization of this goal, still lack and lag behind in policy strategies implementation. This has continued to present challenges to county governments and in particular the implementation of the devolved health care function. This is despite the fact that most county governments have through their respective county assemblies enacted laws most have failed in strategy execution processes for the effective implementation of public private partnerships (PPP) for health care projects. Reports have exhibited that this failure has derailed the implementation of healthcare projects in health information technology in public hospitals under the management of these devolved units of governance. The County Government of Meru is no exception in facing challenges in the implementation of its strategy on public private partnerships (PPP) for health care projects in the management of this devolved function (Oxford Report, 2014). Failure to implement the existing PPPs strategy in healthcare projects has resulted to the non-existence of important advanced health technologies; diagnostic technologies, mHealth applications, electronic health records applications and human resources for health information systems in public hospitals in the Meru County. This study seeks therefore to specifically investigate the effect of technological advancements on the implementations of PPPs in health care projects under devolved system of governance.

3. Research Hypothesis

H₀: Technological Advancements do not have a significant relationship with implementation of public-private partnerships healthcare projects.

H₁: Technological Advancements have a significant relationship with implementation of public-private partnerships healthcare projects.

4. Technological Advancements and Implementation of PPPs Healthcare Projects

The advancement in technology has had a great impact in the provision of health care services especially in countries with a devolved public health care system (Granados, Moreno, Joly & Knoppers, 2017). However they contend, financial constraints and the need to better serve patients informed the decision by many devolved units of governance to implement Public Private Partnerships (PPP) in health care projects whose goal is to adopt new technology such as cloud computing and mhealth applications (Granados, et al., 2017). Technological advancements have also informed the implementation of Electronic Health Records (EHR) projects by devolved units of governance through PPPs (Curioso, Roman, Perez-Lu, Castagnetto & García, 2010).

In a study, Piette et al., (2014) observed the advancements in technology significantly influenced the implementation of PPPs on health projects in public hospitals under the administrative management of departmental governments in Bolivia. Further, they argued financial constraints coupled with the need to introduce mobile phone health applications necessitated the adoption of PPPs for the implementation of this technology to better serve patients (Piette et al., 2014). In a study, Curioso, Peinado, Rubio, Lazo-Escalante and Castagnetto (2009) also established that advancements in technology positively influenced the implementation of PPPs on health care projects in the regions of Peru. They note advancements in biomedical and health informatics applications led to the implementation of mhealth applications and Electronic Health Records (EHR) led to the implementation of PPPs on these health projects by regional governments (Curioso, et al., 2009).

In their study, Simões, Barros and Temido (2010) did observe that technology availability did influence the implementation of PPPs on health projects in hospitals under the administrative management of municipal governments in Portugal. They contend that hospitals with high technological intricacy were less likely to engage in PPPs financial contracts in comparison to those with no technological advancements that engaged in the installation of the health information technologies through these PPPs (Simões, et al., 2010). In a study also Kyloudis, Rekleiti, Toska and Saridi found evidence on the influence of technological advancements on the implementation of PPPs on health care projects in hospitals at regional government levels in Greece. They note emerging technological needs related to advancement in technology and provision of better services to patients significantly led to the implementation of PPPs health information technology projects; Electronic Health Records (EHR) and Human Resources Information Management System (HRIS) (Kyloudis, et al., 2012).

In a study, Saxena (2015) found evidence that technology advancement significantly influenced the implementation of PPPs health projects in public hospitals under the management of state governments in India. She contends that the need to provide patients with high quality services led to the implementation of PPPs in the implementation of Human Resources Information Systems (HRIS) and Infection Detection Technologies in these hospitals (Saxena, 2015). In a study, Himalika Narangoda and Khathibi (2014) observed the need to adopt advanced medical technology significantly influenced the implementation of PPPs health projects in public hospitals under the management of regional governments in Sri Lanka. They argued financial constraints that derailed the need to install EHR and mHealth applications resulted to the implementation of PPPs on these health care projects at these devolved units (Himalika Narangoda & Khathibi, 2014).

In a study, Miles, Conlon, Stinshoff and Hutton (2014) established advancement in technology informed the implementation of PPPs in health care projects by regional governments in Papua New Guinea. They contend that financial constraints coupled with the need to adopt new technologies for a HIV project significantly led to the implementation of PPP in health care projects by these devolved units of governance (Miles, et al., 2014). In a study, Martiniuk et al., (2011) also observed advancement in technology significantly influenced the implementation of PPPs in health care projects by provincial governments in Solomon Islands. Further, they argued low levels of trainings among medical clinical officers necessitated PPPs in the management of telemedicine in public hospitals under the administration of provinces (Martiniuk et al., 2011).

In a study, Ruxwana, Herselman and Conradie (2010) found evidence that technological advancements significantly influenced the implementation of PPPs for health projects. They argued the need to better serve rural population coupled with financial constraints experienced by a provincial government led to adoption of PPPs for the implementation of e-Health solutions in public hospitals in South Africa (Ruxwana, et al., 2010). Further, Modi (2013) established advancements in technology positively influenced the implementation of PPPs in health care projects by regional governments in Tanzania. She argued health benefits coupled with the need to better serve patients informed the implementation of PPPs for the adoption of mHealth applications for Maternal and Child Health projects (MCH) (Modi, 2013).

5. Theoretical Perspective

This study is anchored on the Transaction Cost Theory (TCT). Developed by Williamson, (1971) the Transaction costs theory is based on the premise that all contracts turn out to be in some way incomplete. Further, Williamson (1971) argued that different types of asset specificity have been detected: physical capital specificity such as when some particular health infrastructure machinery, used to produce components specific to the buyer, cannot be converted without costs to manufacture inputs for alternative buyers. Human capital specificity such as when some medical personnel of the upstream firms obtain a specific knowledge of the technology and of the productive process of the buyer.

Similarly, Nikolic and Maikisch (2006) ; Dudkin and Väililä, (2005) proponents of the Transaction Cost Theory argued in health PPPs, Transaction costs refer to the costs of establishing and maintaining a partnership. More specifically, they encompass legal, financial, and technical advisory costs incurred by both public and private sectors in the procurement and operational phases of a project (Nikolic and Maikisch, 2006; Dudkin and Väililä, 2005).

The researcher adopted the Transaction Cost theory to establish the relationship between technological advancements and the implementation Public Private Partnerships (PPPs) projects on health information technology at County government levels. This is done with the view of understanding which institutions (public or private) should bear the initial investment costs of health information technology driven by the goals of reducing transaction costs for these devolved units of governance while providing reliable and affordable healthcare to the populace (Isabalija, Mayoka, Rwashana and Mbarika, 2011) .

6. Research Methodology

This study was guided by descriptive survey research design to investigate the relationship between technological advancements and the implementation public private partnerships (PPPs) healthcare projects in Meru County. Descriptive survey research design was appropriate in the gathering of both qualitative and quantitative data on the influence of technological advancements on implementation of public private partnerships (PPPs) healthcare projects in the study locale. The choice research design was also an important vehicle for the study in establishing the relationship between research variable and problem under study. This originating from survey research design's characteristics that created a platform for the researcher to ask respondents' perceptions, attitudes, behaviors and values in regard to the research topic. A sample size of 309 was used for the study involving; Departments of Health and Physical and Economic Planning Staff, Civil Society Organization's managers and Health Workers in Public Hospitals. Stratified and Simple Random procedures were used to pick final study subjects from the sample. Questionnaire integrating closed as well as open ended questions were self-administered to collect primary data from sampled respondents. The collected primary data was checked for completeness, edited, and finally coded. Quantitative data was analyzed making use of descriptive statistics through the use of Statistical Package for Social Sciences (SPSS) version 22.0 and findings presented in frequency and percentage tables to make valid deduction on the topic of study. Qualitative data were analyzed through the application of content analyses by organizing data into themes, patterns and sub-topics modeled on research objectives.

7. Findings, Interpretations and Presentations

This study sought to establish whether there exists a relationship between technological advancements and the implementation of public-private partnerships in healthcare projects.

7.1. Technological Advancements and Implementation of PPPs Healthcare Projects

The study sought to determine the extent to which respondents agreed with the following statements assessing on influence of technological advancement on the implementation of PPPs healthcare projects for provision of health services at county governance levels. Results are presented in Table 1

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std Deviation
Existence of mHealth applications through PPPs that influence implementation of health care projects.	27.2%	48.7%	4.2%	12.6%	7.3%	2.24	1.19
Non-existence of Electronic Health Records applications through PPPs influencing health care projects.	7.3%	16.2%	1.6%	48.7%	26.2%	3.70	1.23
Existence of Human Resources Information systems PPPs that influence health care projects.	24.6%	49.7%	4.2%	14.7%	6.8%	2.3	1.19
Diagnostics technologies PPPs exist and this influences health care projects implementation of health care projects.	48.2%	29.8%	2.6%	5.2%	14.1%	2.07	1.41
Average mean						2.16	1.23

Table 1: Statements relating to Technological Advancement influence on PPPs Health care projects

Results obtained on influence of technological advancement through PPPs on implementation of health care projects; showed that majority of the respondents as shown by 49.7% were of the view that PPP arrangements on human resources information systems do not exist this adversely influencing health care projects, 48.7% of study respondents were of the view that the non-existence of PPP arrangements on mHealth applications and Electronic Health Records adversely influenced health care projects, 48.2% of study respondents were of the view that PPPs in Diagnostics technologies do not exist this negatively influencing implementation of health care projects. Based on this study findings, it was deduced that majority of study respondents 49.7% were of the view that failure by county governments to implement PPP on health information systems adversely influenced implementation of health care projects, most of the study respondents 48.7% were of the view that failure by county governments to implement PPP arrangements on mHealth applications and Electronic Health Records negatively influenced implementation of health care projects and a significant number of respondents 48.2% were also of the view that failure by county governments to implement PPP arrangements Diagnostics technologies negatively influenced implementation of health care projects.

7.2. Measures of Implementation of PPPs Health Projects under Devolved System of Governance

Respondents were requested to indicate the extent to which they agree with the following indicators as measures of implementation of PPPs health care projects. Results are presented in Table 2

Statement	Very Low Extent	Low Extent	Moderate	Great Extent	Very Great Extent	Mean	Std Deviation
Non-existence of PPPs for Construction of Public Hospitals.	28.8%	47.6%	14.1%	42.3%	6.8%	2.6	0.97
Existence of PPPs for provision of Drugs and Essential Supplies do not influence health care projects.	26.2%	48.7%	3.1%	16.2%	5.8%	2.3	1.18
Non-existence of PPPs for health information systems.	2.6%	12.0%	7.3%	27.7%	50.3%	4.11	1.34

Table 2: Measures of Implementation of PPPs Health Care Projects under Devolution

The study sought to establish the extent to which the above indicators were measures of implementation of PPPs health projects under the devolved system of governance. From the study findings, majority of the respondents agreed to a great extent the following measures were highly taken into consideration in the implementation of PPPs health projects under the devolved system of governance; Non-existence of PPPs for health information systems as shown by a mean of 4.11, Non-existence of PPPs for Construction of Public Hospitals as shown by a mean of 2.6 and Existence of PPPs for provision of Drugs and Essential Supplies do not influence health care projects shown by a mean of 2.3. From the study findings, it was deduced that the county government needs to adopt PPPs on health technological advancements that will positively influence the implementation of health care projects. The findings also signify that technological advancement strongly influences implementation of PPPs health information technologies systems projects.

7.3. Pearson Product-Moment Correlation Analysis

A correlation is a number between -1 and +1 that measures the degree of association between two variables. A positive value for the correlation implies a positive association while a negative value for the correlation implies a negative or inverse association. The Correlation coefficients are presented in Table 3.

Implementation of PPPs healthcare projects	Implementation of PPPs Healthcare Projects	
	Pearson Correlation	1
	Sig. (2-tailed)	
Technological Advancements	Pearson Correlation	0.918
	Sig. (2-tailed)	0.017

Table 3: Correlations Table

The analysis of correlation results between technology advancements and implementation of public-private health projects shows that there is a strong positive association where the correlation coefficient is 0.918, with a p-value of 0.017. From this finding it was concluded that advancements in health technologies; mHealth applications, electronic health records, health human resources information systems and diagnostic technologies all influenced the adoption of PPPs for their implementation by county governments facing financial constraints to execute their use.

8. Conclusions

The study concluded that technological advancements are correlated to the implementation of PPPs arrangements for implementation of health information system. This is because technological advancements influence decisions by devolved units' of governance that are both faced by financial constraints and wish to expedite their realization of goals for provision of universal health care to implement PPPs.

9. Recommendations

From the finds, the study recommends that the county government in partnerships with national government agencies should develop effective PPPs strategies that would attract development partners such as Non-governmental organizations to provide funding for the adoption of PPPs in health information technologies systems to enhance the realization of universal health goals at devolved government levels.

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