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**INFLUENCE OF INNOVATIVENESS ON PERFORMANCE OF  
HEALTHCARE UNITS IN NAIROBI, KENYA**

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**Abstract**

The main purpose of this study was to explore how innovativeness influences the performance of healthcare units in Kenya. The study specifically sought to determine how the five indicators of innovativeness namely: moving services close to patients, hiring highly skilled workforce, opening up new revenue, standardizing operating procedure and borrowing assets influence the performance of healthcare units in Kenya. To compete effectively, healthcare units must constantly improve their performance by reducing maternal mortality, reducing child mortality and increasing the number of referrals to the healthcare unit. The study adopted a survey research design and the target population were the healthcare units in Nairobi, Kenya. The target population was healthcare units in Nairobi, comprising County Hospitals, Health Centres and Health Clinics totalling to 71 and the sample size was 49. Data was collected using questionnaires and analysed using SPSS and Microsoft Excel. Inferential data analysis was carried out by the use of factor and correlation analysis. Regression models were fitted and hypothesis testing carried out using multiple regression analysis and standard F and t tests. The findings of this study from multiple regression analysis indicated that innovativeness positively influenced performance of healthcare units in Nairobi, Kenya. The study results lead to the conclusion that innovativeness improves the performance of Healthcare units in Kenya. The study recommends that healthcare units should focus on moving services close to patients, hiring highly skilled workforce, opening up new revenue, standardizing operating procedures during service to clients since their practice is necessary to ensure improved performance.

**Keywords:** Innovativeness, moving services close to patients, hiring skilled workforce, opening up new revenue, standardizing operating procedure, borrowing assets, Healthcare unit performance.

**Introduction**

Reduction of maternal and child mortality remains a major challenge to attaining global social and economic development. Worldwide, more than 515,000 women die each year from pregnancy and childbirth complications while four million babies die within the first week (neonatal period) of life. Almost all of the maternal deaths occur across all developing countries where 450 women per every 100,000 live births die during pregnancy, childbirth or at postpartum period (ROK, 2006; WHO, 2007) as cited in Kiprono (2009). In a healthcare unit, innovativeness reflects a tendency to engage in and support new ideas, uniqueness,

experimentation and creative processes that may result in new products, services or technological processes (Clark, 2010; Lumpkin and Dess, 1996). It involves moving services close to patients, hiring highly skilled workforce, opening up new revenue, standardizing operating procedures and borrowing assets.

Healthcare industry, also referred to as medical industry, is an aggregation of sectors within the economic system that provides goods and services to treat patients with curative, preventive, rehabilitative, and palliative care. The modern health care industry is divided into many sectors and depends on interdisciplinary teams of trained professionals and paraprofessionals to meet health needs of individuals and population at large. This industry is one of the world's largest and fastest-growing industries' consuming over 10% of gross domestic product (GDP) of most developed nations (RoK, 2011).

World Health Organization (WHO) revealed that health costs paid into the Health care industry in the United States in the year 2011 consumed 17.9% of the Gross Domestic Product, being the largest of any country in the world and that it will continue its upward trend to reach 19.6% of the GDP by 2016. It also revealed that in the year 2001, for the Organization for Economic Corporation and Development (OECD) countries the average was 8.4% with the United States (13.9%), Switzerland (10.9%), and German (10.7%) being the top. In Kenya however, only 4.6% of the nation's GDP was invested in its healthcare industry which has a serious implication for the country's urgent healthcare problems (RoK, 2011).

Although Kenya is making significant gains in promoting awareness of health and wellness, preventable diseases remain a serious issue. Malaria is one of the country's biggest problems with thousands of children dying every year from this treatable disease. Improving access, coverage and quality of health services depends on the ways services are organized and managed, and on the incentives influencing providers and users. In market-based health care systems, such services are usually paid for by the patient or through the patient's health insurance company (RoK, 2011). Other mechanisms include government-financed systems (such as the National Health Services in the United Kingdom, & NHIF in Kenya).

Kenya's Vision 2030 for health is to provide "equitable and affordable health care at the highest affordable standard" to her citizens. Good health is expected to play an important role in boosting economic growth, poverty reduction and the realization of social goals. The majority of Kenyans still do not have access to affordable health care. Under the Vision 2030, Kenya was to restructure the health delivery system and also shift the emphasis to "primitive" care, in order to lower the nation's disease burden. This has improved access and equity in the availability of essential health care and result in a healthy population that will effectively participate in the development of the nation (RoK, 2007).

Wangalwa et al., (2012), in their research on Effectiveness of Kenya's community Health Strategy in delivering community-based maternal and new-born health care in Busia County,

revealed that maternal mortality ratio and neonatal mortality rate trends in Kenya have remained unacceptably high. That the implication on the Kenya health policy and practice is for the policy to focus on people centeredness and participatory approaches in delivery of health care services. In the year 2007, the ministry of Public Health and Sanitation adopted a community health strategy to reverse the poor health outcomes in order to meet Millennium Development Goals 4 and 5 (RoK, 2011).

### **Statement of the problem**

Innovativeness as entrepreneurial activities in established organization is an important aspect of organizational economic development and wealth creation. Studies of innovativeness have grown rapidly and they tend to argue that innovativeness leads to superior firm performance which is a part of successful organization.

More needs to be investigated about how healthcare units may impact on Healthcare unit performance in Kenya and especially determining performance in terms of reduced maternal death, reduced child mortality and increased referrals. Most of the researches have been in the manufacturing sector, micro and medium enterprises and also in Kenyan large enterprises and not much has been done to measure performance of Healthcare units. Many of the Healthcare units, in their process of transformation to the market economy are accepting new business approaches and models, one of them being innovativeness.

Medical Care is characterized by enormous inefficiency with high costs and poor outcomes. These high costs lead to poor performance by the Healthcare units, but practicing of innovativeness can help reduce the costs through innovation and creativity. In other industries characterized by inefficiency, efficient firms expand to take over the market, or new firms enter to eliminate inefficiencies which do not happen in medical care (Cutler, 2010).

Globally Healthcare units are still performing poorly although they registered a decrease in the number of child deaths from 12.5 million in 1990 to 8.8 million in the year 2008 ( Danzhen *et al.*, 2010) as cited in Wangalwaet *al.*, (2012). This decrease in child death is an indication of improved performance of the Healthcare units. Wangalwaet *al.*, (2012) also revealed that neonatal deaths accounted for about one third of child deaths and that they are linked closely to slow progress in reduction of maternal mortality. The high maternal and new-born mortality in the sub- Saharan Africa is related to unsafe maternal and new-born health practices.

These poor performance in the Health sector; maternal and neonatal health trend in Kenya is a replica of other sub-Saharan African countries where the maternal mortality ratio is estimated to be 488 women per 100,000 live births which has not significantly changed over the last decade as reported by the Kenya Demographic and Health Survey (2003) as cited in Wangalwaet *al.*, (2012). Kenya Demographic and Health Survey (2008-2009) observed an improved performance in the Health sector due to the under- five reduced mortality between the years 2003 and 2008 from 36% and 32% respectively but neonatal mortality marginally declining by 6.1%.

Wangalwaet *al.*, (2012) revealed that maternal mortality ratio and neonatal mortality rate trends in Kenya have remained unacceptably high.

Health Sector Working Group Report (2012) reported an improved performance in the sector with a reduction of under-five and infant mortality but reported a poor performance on the side of maternal mortality having deteriorated from 414 in 2003 to 488 deaths per 100,000 live births in 2008-9. Dustin (2010) revealed that in Kenya, the overall under five child mortality ratio is approximately 121 per 1000 live births, which is roughly double the global average. This is a measure that reveals poor performance of the Healthcare sector. Dustin (2010) also observed that this number drops significantly to 90 per 1000, for the wealthiest 20% of the population, while it jumps to nearly 150 for the poorest 20%.

Experience over the years has shown that to improve maternal new-born health and reduce morbidity and mortality, efforts should focus on building capacities at individual, family, community levels to ensure appropriate self-care, prevention, and care-seeking behaviour. These practices are associated to practices of innovativeness. Elder *et al.*, (1999) as cited in Wangalwaet *al.*, (2012) revealed that limited resource settings, community-level interventions are potentially effective ways to address the problem at its roots, as decisions to seek and access health care are strongly influenced by the social-cultural environment.

Very few past studies have examined how innovativeness influences performance of Healthcare units and specifically in terms of reduced maternal mortality, reduced child mortality and increased referrals to the Healthcare unit. The Healthcare units have a great potential for improvement in terms of reduced maternal mortality, reduced child mortality and through increased referrals if only they practice innovativeness.

This study has investigated how innovativeness influences performance of Healthcare units in Kenya. Kenyan healthcare units, in their process of reducing maternal mortality, reducing child mortality and increasing referrals, need to accept and practice innovativeness (moving services close to patients, hiring highly skilled workforce, opening up new revenue, standardizing operating procedure and borrowing assets).

Poor quality health care leads to increased maternal mortality, increased child mortality and reduced referrals to the healthcare unit. However, not enough studies have been done locally to unearth the influence innovation has on performance of Healthcare Units in Kenya. This study therefore sought to fill the knowledge gap by determining how innovativeness influences the performance of Healthcare units in Kenya.

### **Objectives of the study**

The overall objective of this study was to determine the influence of innovativeness on Performance of healthcare units in Nairobi City County. Its specific objectives were: (a) To find out how moving services close to patients influences the performance of healthcare units in

Nairobi County, (b) to determine how hiring highly skilled workforce influences the performance of healthcare units in Nairobi County, (c) to find out how opening up new revenue influences the performance of healthcare units in Nairobi County, (d) to find out how standardizing operating procedure influences the performance of healthcare units in Nairobi County and (e) to find out how borrowing assets influences the performance of healthcare units in Nairobi County.

### **Literature Review**

Innovativeness reflects a firm's tendency to engage in, and support, new ideas, uniqueness, experimentation and creative processes that may result in new products, services, or technological processes (Clark, 2010; Lumpkin and Dess, 1996). Innovative firms have capabilities to monitor the market changes and respond quickly, thus capitalizing on emerging opportunities (Wiklund, 1999). According to Huseet *al.*, (2005) as cited in Linyiru (2015), firms operating in turbulent environments are often characterized by rapid and frequent new product creation and high levels of research and development. Such environments appear to play a crucial role in influencing corporate entrepreneurship in an organization. Environmental changes stimulate firms to innovate by introducing new technologies, new products, service and processes to take advantage of opportunities arising from the dynamic environment (Huseet *al.*, 2005).

Dess, et al., (1997) classifies innovations as product-market innovativeness and technological innovations. They argue that product-market innovativeness includes emphasizes on product design, market research, advertisement and promotion. Zirger(1984) avers that if an organization is willing to commit a significant amount of its resources in developing new products then product innovations are more likely to be successful. Process innovation could be termed as technological innovativeness which consists of research and engineering efforts aimed at developing new products and processes. Miller and Friesen (1982) argue that a high level of innovation is associated with greater reliance on technically trained specialists. Hage (1982) supports Miller and Friesen (1982) arguing that the more professionals and specialists within a firm, the higher the level of innovation.

Environmental change can cause the firm to search for new means to remain competitive, which foster process innovation activities. Innovation keeps firms ahead of their competitors, thereby gaining a competitive advantage that leads to improved financial results (Wiklund, 1999). Zahra and Gravis (2000) define innovation as the Healthcare unit's ability to moving services close to patients, highly skilled workforce, opening up new revenue, standardizing operating procedures and borrowing assets. Innovation also revises the firm's knowledge base, allowing it to develop new competitive approaches, which can be exploited in new foreign markets to achieve growth and profitability (Zahra &Gravis, 2000).

Clark (2010) found that companies that are innovators based their focus on new innovations, the number of new innovations and levels of investment in new innovations. Venter *et al.*, (2008), state that at the centre of entrepreneurship is innovativeness". An organization that innovates is classified as being entrepreneurial. Entrepreneurial activities influence a company's commitment to innovation (Miller 1983; Lumpkin & Dess, 1996) by offering innovative products and processes.

According to Huseet *al.*, (2005), innovation has become a source of international competitive advantage. Zahra and Gravis (2000) stated that innovation can also lead to the development of key capabilities that can improve a firm's performance. They also put emphasis on the fact that innovation generates products, goods, processes, services and systems that can be used to meet customer needs and build a strong market position. Thus innovation can improve the firm's profitability and fuel its growth. Better profitability and sustainability are also realized from continuous innovation by the entrepreneurial organization. Huseet *al.*, (2005) stated that innovation can be distinguished in three ways: the development of new products and services, the adoption of new technologies with an intention to improve production methods, the establishment of novel organizational structures and administrative systems. Innovation involves reinventing products in a profitable manner (Venter *et al.*, 2008). The level of entrepreneurial behaviour by the organization allows the company constantly to evaluate the potential possible business opportunities that will bring growth and sustainable business (Lumpkin & Dess, 1996).

Innovation can be forced by industrial factors (fast technology changes in the industry, customer demands), environmental dynamism (new processes, technology) and international activities such as international diversification (Huseet *al.*, 2005). According to Lumpkin and Dess (1996), a level of expenditure and a number of resources dedicated to research and development represent a firm's involvement in innovation activities. Innovation stimulates firms to behave entrepreneurially. According to Venter *et al.*, (2008), most technological firms use innovation to achieve objectives such as maximum profits, gaining market share, creating niche markets and adding value for stakeholders.

Kuratko and Welsch (1994) and Morris and Kuratko (2002) aver that innovation is considered the first dimension that characterizes an entrepreneurial company. They argue that personal initiatives create an atmosphere of innovation, and innovative programmes which help to build an entrepreneurial company. Lau, Chan, Tai, and David (2010) argue that innovation reflects a firm's tendency to engage in and support new ideas, experimentation and creative processes that may result in new products, services or technological processes. The level of expenditure and resources dedicated to research and development (R&D) represents a firm's involvement in innovative activities.

The corporate entrepreneurship theory is anchored on a firm's basic underlying orientations, processes, innovativeness, and decision-making activities that are imperative to a firm's success Knight (1997). He further argues that, innovativeness is the appropriate applicable strategy in

instances where regionalization and globalization are dominant, and where competition and uncertainty have increased intensely.

Healthcare units need to develop certain capabilities and strategies to help them navigate successfully the prevailing scenario of regionalization and globalization. This will lead to the identification of entrepreneurial orientation or corporate entrepreneurship as a key strategy, designed to facilitate healthcare units to succeed in regional and global markets. Wiklund and Shepherd (2005) aver that an entrepreneurial firm is one that engages in product-market innovation, undertakes somewhat risky venture to come up with proactive innovations, beating competitors to the punch. Such characteristics are associated with improved performance of healthcare units, owing to today's business model life cycles which are shorter, where future profit streams from existing operations are uncertain, and entrepreneurs need to constantly seek out new opportunities.

### **Research Methodology**

#### **Research Design**

This study adopted a mixed research design that is both descriptive and correlation. The descriptive survey design was adopted to investigate and explore the study variables for an in-depth understanding of the individual variables. The correlation approach was adopted to help investigate how the constructs of innovativeness influence the performance of healthcare units. Descriptive survey is a method of collecting data by interviewing or administering a questionnaire to a sample of individuals (Orodho, 2003). The design can also be used when collecting data about people's attitudes, opinions, habits or any of the variety of education or social issues (Orodho & Kombo, 2002). The researcher also explored into secondary sources of information gathered or obtained through previous researches on the topic of innovativeness. Mugenda and Mugenda (2003) avers that exploratory research is good for analysing social scenarios that are characterized by qualitative factors that are not quantitative in nature.

The descriptive survey design is only involved in the in-depth exploration of the study variables without looking into the relationships between them. The study objectives involve determination of the relationship between innovativeness and performance of healthcare units. To draw conclusions on these objectives, the correlation design was adopted to help in the determination of the relationship between the variables.

#### **Study Population**

The target population of this study was 71 Healthcare Units in Nairobi County consisting of Hospitals, Health centre, Dispensaries and Health Clinics. The study has investigated whether these Healthcare Units have adopted innovativeness and the Healthcare Unit's performance in terms of reduced child mortality, reduced maternal death and increased referrals. Nairobi Hospital and Kenyatta Referral Hospitals were left out as they are in their own category and are only two. At the County Hospital, the Medical Superintendent was required to fill the

questionnaire, at the Health centre: a Clinical Officer was required to fill the questionnaire while at the Health Clinic/ Dispensary the Nurse in charge was required to fill the questionnaire. A drop and pick method was conducted to all 49 Health Officers in the three categories of Health Units in Nairobi. The list of the Health Units in Nairobi is as per Nairobi City County records of 26<sup>th</sup> January 2015.

### **Sample and Sampling Methods**

The sample size was obtained using stratified random sampling technique because the population is non-homogeneous. The researcher did a stratified random sampling of Hospitals, Health centres and Health Clinics as the sub- samples for the study excluding the referral hospitals (Kenyatta National Referral Hospital and Nairobi Hospital) due to their advanced level. The sample size is of 49 Healthcare Units with each of the remaining three categories allocated equal proportions as per their contributions of 24, 35 and 41 per cent of the total 49 Health units. This is represented by 12 County Hospitals, 17 Health centres and 20 Health Clinics. The respondents were Medical Superintendents for County Hospitals, Clinical Officers for Health centres and Nurse in Charge for Health Clinics. The above selected officers are better placed to have knowledge in the area of study.

### **Data Collection Tools**

The main tool for data collection used in the study is a structured questionnaire. The structured questionnaire was divided into three different parts in order to capture information from different parts of the Healthcare Unit. The first part of the questionnaire seeks demographic information of the respondent and that of the Healthcare Unit to enable a clear understanding of the Healthcare Units in Kenya: the second part is to capture information on the level of adoption of innovativeness indicators (moving services close to patients, hiring highly skilled workforce, opening up new revenue, standardizing operating procedure and borrowing assets); the third part of the questionnaire is to capture information on child mortality, maternal death and on number of referrals to the healthcare unit.

The questionnaire was designed to address each specific objective as captured in the study (Magenta & Magenta, 2003). For each part of the questionnaire, combinations of closed and open ended questions were used to collect data that represents the dependent variable (performance of the healthcare unit) and independent variable (innovativeness). Secondary data was obtained through review of published and unpublished innovation related literature. Previous research studies undertaken in the entrepreneurship field, management and firm performance from previous studies undertaken in other parts of the World also provided a good source of secondary literature.

Information contained in annual reports and other documented literature, proved very useful in providing the necessary secondary information during the study. Further secondary information was obtained through the Internet by visiting various websites to access publications relevant to



the study. This made it possible to have an in-depth assessment, appreciation and understanding of the existing literature.

## **Results and Discussion**

### **Analysis of Demographic profile of respondents**

The quantitative data collected from the demographic profile section were subjected to descriptive analysis using Warp PLS v.5 statistical software. The demographic profile of target respondents (gender, age, and education level) was presented in terms of frequency and percentage scores. On the level of education, majority (49.2%) of the key respondents were undergraduate degree holders, 28.8% diploma holders and 22% of the respondents were holders of post-graduate degrees. On the length of service with healthcare units, majority (39%) of respondents had worked with the healthcare units for 4 to 6 years. Another 32.2% had worked for up to 3 years with the healthcare units and only 10.2% of the respondents had worked in the healthcare units for less than 1 year. The researcher also sought to determine the trainings that the respondents had received during the service to the unit. Majority (37.3%) of the respondents had received more than 4 trainings for the period they had been in service with the healthcare units, 49.2% had had between 2 to 4 trainings and 3.4% of the respondents had not undertaken any training since they joined the healthcare units. These results revealed that nearly all the respondents had undertaken a number of trainings which means they were able to offer services that were of quality to the patients and use the latest equipment in the market.

The units were categorized based on the main sponsor of the units. Majority (25.4%) of the units being studied were privately sponsored units, 22% were sponsored by churches, 20.3% sponsored by the central government, 18.6% by county government and only 13.6% of the units were mission hospitals. The Researcher also sought to find out the length of the period that the units had been in operation. Most of the healthcare units had been in operation for less than 10 years. This constituted about 32.2% of the units studied while 25.4% of the units had been operating for between 10 to 15 years. This means that over 60% of the units that were studied had been in operation for only up to 15 years. Less than 30% had operated for more than 20 years. On the Number of employees, majority (39%) of the healthcare units had 50 employees or less. Another 18.6% of the healthcare units had 51 to 100 employees. Only 15.3% of the healthcare units had more than 200 employees with 10% having more than 300 employees to offer service.

### **Analysis of Survey response**

Questionnaires were delivered to the 49 units, out of which 41 were returned. This represents a response rate of 83.7% of the sample which the researcher considered an adequate response rate. This is in line with Magenta (2012) who stated that a response rate of 50% is adequate, 60% and above as good and above 70% very good (See Table 1).

**Table 1:** Response rate

Sector	Sample size	Returned	Response rate
County Hospitals	12	10	83.333%
Health Centre	17	14	82.353%
Health clinics	20	17	85.000%
Total	49	41	83.673%

Source: Research Data (2018)

**Normality testing**

Univariate normality tests were run for all independent and dependent variables and skewness and kurtosis examined. The common rule-of-thumb for normality is skewness to be within the range of -3 and +3 and Kurtosis to be within the range of negative or positive eight(8) (Kline, 1998). From the analysis, the skewness coefficients were all within the acceptable range of -3 and +3. According to Moran (2006) and Hair *et al.*, (1998), data in psychometric studies are often not normally distributed.

**Internal Consistency assessment**

Internal consistency of the research instrument was measured using Cranach’s alpha. Reliability should be 0.7 or higher or if it is an exploratory research, 0.6 or higher is acceptable (Bagozzi and Yi, 1988). More conservatively the Cranach’s alpha coefficients should be equal to or greater than 0.7 (Nunnally & Bernstein, 1994). Table 2 summarizes these findings.

**Table 2: Results for Internal Consistency assessment**

Latent variables	Alpha reliability coefficients
Innovativeness	0.751
Performance of healthcare	0.856

Source: Research Data (2018)

In this study construct validity was tested for Convergent and discriminate validity which are the evidence of construct validity. The data analysis revealed that the AVE value for innovativeness was 0.629 while that for Performance was 0.563. The AVE coefficients for the latent reflective variables used in this study were above the recommended minimum of 0.5 thus confirming convergent validity of the construct used in this study. The Table 3 shows the latent reflective variables together with their corresponding AVE coefficients.

**Table 3: Average Variances Extracted**

Latent variables	AVE coefficients
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Innovativeness	0.629
Performance of healthcare	0.563

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Source: Research Data (2018)

### **Descriptive statistics for the latent variable measurement items**

The independent variable the researcher studied was innovativeness. The mode was used as the average being that the variable indicators were also measured categorically on an ordinal scale of 5. To measure this variable, the respondents were asked how much they agreed with the statement that patients and guardians are allowed to contact the doctor on phone; to this statement, 20.3% of the respondents observed that they are never allowed, another 15.3% said they are rarely allowed, 28.8% observed that they are sometimes allowed to call the doctor, 13.6% observed that they are usually allowed to call and only 22% observed that they are always allowed to call the doctor to book an appointment or make consultation on phone. The modal class of the responses to this indicator was found to be 3.

This implies that on average, patients and guardians are only sometimes allowed to contact the doctors on phone to book an appointment or to consult in the evenings and weekends in the healthcare units. Healthcare units that allow the patients to book appointments online are likely to have more clients; this is because it is more convenient and saves time and resources. The time savings experienced by a facility can translate into monetary savings, as both staff time and services translate into expenses and revenue, respectively leads to improved performance of the healthcare units.

Considering the indicator on the level of agreement with the statement that skills and training requirements are tightly linked to the tasks at hand; only 1.7% of the respondents observed that skills and training requirements are never tightly linked to the tasks at hand, 6.8% of the respondents observed that skills and training requirements are rarely tightly linked to the tasks at hand, 10.2% of the respondents observed that it's only sometimes that skills and training requirements are tightly linked to the tasks at hand. The majority (45.8%) of the respondents observed that skills and training requirements are usually tightly linked to the tasks at hand and the remaining 35.6% observed that skills and training requirements are always tightly linked to the tasks at hand. The modal class of the responses to this indicator was found to be 4. This implies that on average, skills and training requirements are usually tightly linked to the tasks at hand in the healthcare units.

The results of this study disagree with those of Campbell et al., (2015) who in their study revealed that it should not always be that skills and training requirements are always tightly linked to the tasks at hand. In their research in India, they observed that Life-Spring Hospitals uses midwives to provide most of the care at its maternity hospitals. This allows just a single doctor to oversee significantly more patients by focusing on tasks that specifically require a doctor's attention which lowers charges for a normal delivery. In the United States, Minute-Clinic uses nurse-practitioners rather than physicians to staff primary-care clinics. In some

countries, this approach also helps to ameliorate shortages of medical talent. In sub-Saharan Africa, for example, the Health-Store Foundation has trained community health workers to diagnose and treat the region's top five diseases, which together account for more than half of preventable deaths there (Campbell, *et al.*, 2015).

The study also sought to find out the perception of respondents on the indicator that the healthcare units have standardised operating procedures in all clinical protocols; none of the respondents gave the observation that the healthcare units never have standardised operating procedures in all clinical protocols. Only 1.9% of the respondents observed that their healthcare units rarely have standardised operating procedures in all clinical protocols, 5.1% of the respondents observed that in their healthcare units it is only sometimes that they have standardised operating procedures in all clinical protocols, 20.3% of the respondents observed that their healthcare units usually have standardised operating procedures in all clinical protocols. The majority (62.7%) of the respondents observed that their healthcare units always have standardised operating procedures in all clinical protocols. The modal class of the responses to this indicator was found to be 5. This implies that on average, the healthcare units always have standardised operating procedures in all clinical protocols.

This research results agree with those of Campbell *et al.*, (2015) which revealed that 'repurposing' mobile-phone systems, call centres, and other existing technologies and infrastructure allows innovators to extend health care access, increase the standardization of care, and improve lab or productivity.

To measure innovativeness, the respondents were also asked how much they agreed with the statement that existing institutions, infrastructure and networking is used to reduce capital investments and operating costs; to this statement, 1.7% of the respondents observed that existing institutions, infrastructure and networking are never used to reduce capital investments and operating costs; 23.7% of the respondents observed that in their healthcare units they rarely use existing institutions, infrastructure and networking to reduce capital investments and operating costs; another 20.3% of the respondents observed that their healthcare units sometimes use existing institutions, infrastructure and networking to reduce capital investments and operating costs; 37.3% of the respondents observed that their healthcare units usually use existing institutions, infrastructure and networking to reduce capital investments and operating costs and the remaining 16.9% of the respondents observed that their healthcare units always use existing institutions, infrastructure and networking to reduce capital investments and operating costs. The modal class of the responses to this indicator was found to be 4. The implication here is that on average, existing institutions, infrastructure and networking is usually used to reduce capital investments and operating costs in the healthcare units.

Katz (2013) observed that the use of the existing technology infrastructure would be useful in any part of the world where health care resources are scarce. Katz (2013) asserts that the approach can also provide benefits in developed countries and that, technology could be used, for

example, to reduce emergency-room overcrowding by providing phone or Internet-based advice and triage services during evenings and weekends. Similarly, it could be used to deliver care remotely for patients who require ongoing treatment for diabetes, asthma, or other chronic diseases. This research therefore agrees with that of Katz (2013) on the use of existing institutions, infrastructure and networking in usually used to reduce capital investments operating costs in the healthcare units.

The research also sought to find out how much the respondents agreed to the statement that revenue streams are opened up to extend activities into other sectors like shops, restaurants, churches; to this statement, 15.3% of the respondents observed that revenue streams are never opened up to extend activities into other sectors. Twenty two per cent of the respondents observed that their healthcare units rarely opened up revenue streams to extend activities into sectors like shops, restaurants, and churches. Another 28.8% of the respondents observed that their healthcare sometimes opened up revenue streams to extend activities into other sectors; 18.6% of the respondents observed that their healthcare units usually open up revenue streams to extend activities into other sectors like shops, restaurants, churches. The remaining 15.3% of the respondents observed that their healthcare units always opened up revenue streams to extend activities into other sectors like shops, restaurants, churches. The modal class of the responses to this indicator was found to be 3, implying that on average, revenue streams are sometimes opened up to extend activities into other sectors like shops, restaurants, churches in the healthcare units.

The other indicator considered for measuring innovativeness was on whether low cost franchise model is used to take care -givers close to patients; to this statement, 5.1% of the respondents observed that low cost franchise model is never used to take care -givers close to patients; 27.1% of the respondents observed that their units rarely use low cost franchise model to take care -givers close to patients ;13.6% of the respondents observed that in their healthcare units low cost franchise model is sometimes used to take care -givers close to patients; 32.2% of the respondents observed that the healthcare units usually use low cost franchise model to take care-givers close to patients, and the remaining 22% of the respondents observed that low cost franchise mode in their healthcare units is always used to take care -givers close to patients . The modal class of the responses to this indicator was found to be 4. This has an implication that on average, low cost franchise model is usually used to take care -givers close to patients by the healthcare units. The act of franchising is practiced in 94.9% of the healthcare units of the respondents with only 5.1% observing that they never practice franchising to take care- givers close to the patients. Therefore the results are an indication that healthcare units are practicing CE.

### **Path analysis**

The model development and path analysis involved two stages which included the measurement (outer model) and analysis and the second stage thus structural modelling (Inner model) and analysis (Henseler, Ringle, & Sarstedt, 2012).The statistical reliability assessment for the latent

variable indicators was done by analyzing the ‘outer model’ (measurement model) which consisted of the latent variable indicators and the paths connecting them to their respective reflective latent variables. In this study, Outer model loadings were used in measuring reflective latent variables.

**Table 4:** Outer model assessment results

Latent variable Indicators	Innovativeness latent variable	Performance latent variable
Innov1	0.557	
Innov2	0.940	
Innov3	0.984	
Innov4	0.855	
Innov5	1.000	
Innov6	0.865	
Per1	0.422	0.907
Per2	0.938	0.748
Per3	0.367	0.930
Per4	0.769	0.739
Per5	0.467	0.884

Note: Loadings and cross-loadings shown are unroasted and after Kaiser Normalization  
 Source: Research Data (2018).

**Results of the structural model (Inner model)**

Assessment of the structural model (inner model) was done using Warp PLS statistical software v.5. The path analysis involved using an algorithm in which factor scores were estimated by averaging all the indicators associated with the latent variables. P-values were calculated through the process of Resembling. This analysis was done to answer the objective of the study which was to determine the influence of innovativeness on Performance of healthcare units in Nairobi City County. From the path analysis the following observations have been made. The results revealed a positive relationship between Innovativeness and Performance of healthcare (beta=0.475; P=<0.001).

**Table 5: Path coefficients and P values**

Latent variable	Path Coefficient(beta - estimates)	Standard error	P-value	Significance of path
Innovativeness Performance	0.475	0.130	<0.001	Significant

Source: Research Data (2018)

**Variance explained (R<sup>2</sup>)**

The square multiple correlations (R<sup>2</sup>) is the measurement of percentage of variation that is explained by a model. The results for variance explained (R-squared) for the independent variables was R<sup>2</sup> = 0.226 for Performance of healthcare units. The explanatory power of the structural model was evaluated by examining the squared multiple correlation (R<sup>2</sup>) value in the final dependent constructs.

**Assessment of the global model fit**

The global (overall) model fit can be assessed by means of inference statistics, thus the tests of model fit, or through the use of fit indices (Henseler et al, 2012) .The results of model fit and quality indices are captured in Table 6.

**Table 6: Model fit and quality indices**

Average path coefficient (APC)	0.475	P<0.001	Acceptable.
Average R-squared (ARS)	0.226	<b>P=0.032</b>	Acceptable.
Average full co linearity VIF (AFVIF)	1.233	Acceptable if <= 5. ideally <= 3.3	Acceptable.
Tenenhaus GoF (GoF)	0.284	small >= 0.1 medium >= 0.25 large >= 0.36	Acceptable.

Source: Research Data (2018)

From the analysis, the model fit and quality indices confirmed this model to be fit with the data collected as the APC and R-squared significant in the model. APC values are deemed acceptable if the value is equal to or less than five. This indicated good quality index for the model. The Average R-squared (ARS) Coefficient was ARS =0.226with P values below 0.5. The minimum threshold requirement is that P-values should be less than 0.5 for the Average R-squared (ARS) of the model. The Average full co linearity VIF (AFVIF) coefficient was 1.233 which was below the value of 5 hence acceptable.

### **Conclusion**

This study examined the influence of innovativeness on the performance of health care units in Nairobi County. Specifically, the study examined the influence of moving services close to patients, hiring highly skilled workforce, opening up new revenue, standardizing operating procedures and borrowing assets on the performance of health care units in Nairobi County. The results of the research indicate that health care units that engage in innovativeness perform better than those that do not.

### **Recommendations**

Health care units that wish to compete in the global stage may do so by practicing innovativeness through moving services close to patients, hiring highly skilled workforce, opening up new revenue, standardizing operating procedures and borrowing assets to reduce on the cost of services offered. There is need to adapt innovativeness for excellent service delivery by every institution to ensure it boosts the performance of the healthcare unit sand that patient sare given the right service and in the best way possible.

### **Areas for further research**

The same research could be carried out in another County to see whether the findings are similar to these findings. Future studies could also apply different research instruments like focus group discussions and use of interview guide so that the respondents get involved in the discussions. This will generate detailed information which would help in bringing out better strategies for Corporate Entrepreneurship and its influence on the performance of Healthcare units in Kenya. Future studies could also repeat the same study in the same County but then use other measures of performance other than reduced maternal mortality, reduced child mortality and increased referrals.

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