INFLUENCE OF DEVOLVED HEALTHCARE SYSTEM ON DELIVERY OF HEALTH SERVICES IN MERU COUNTY, KENYA

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ABSTRACT

The promulgation of the Constitution of Kenya, 2010 birthed devolution. After the General Elections held on 4th of March of 2013, devolution of various public functions including healthcare gained momentum. However, there have hitherto been conspicuous challenges facing delivery of public healthcare, which have been attributed to devolution. This has necessitated this research, which sought to evaluate the influence of devolution health-service delivery in Kenya by focusing on Meru County. The general objective was to evaluate the influence of the devolved healthcare system on delivery of health services in Meru County. Specifically, the study analyzed how the various components of the aforementioned systems, that is, devolved healthcare financing, devolved leadership, devolved healthcare workforce, and devolved medical supply system influence delivery of health services in Meru County. Pertinent empirical studies have been reviewed. The study was guided by the sequential theory of decentralization and the systems theory. A descriptive survey research design was adopted. All the healthcare managers in Kenya constituted our target population. The members of Sub-County Hospital Management Committees and Meru Level V Hospital Committee totaling 168 comprised the study population. A census design was adopted where all the 168 devolved healthcare managers in Meru County were projected to take part in the study. A structured questionnaire was used for data collection. The instruments' validity and reliability were assessed. The Statistical Package for Social Sciences Version 24.0 tool was used to analyze date. Descriptive and inferential statistics were computed for quantitative data. The results of the analysis were presented in tabular form and were accompanied by pertinent interpretations and discussions. It was found that devolved healthcare financing ($r=0.321$; $p<0.05$), devolved leadership ($r=0.396$; $p<0.05$), devolved healthcare workforce ($r = 0.487$; $p < 0.05$), and devolved medical supply system ($r = 0.486$; $p < 0.05$) were significantly correlated with delivery of healthcare services in Meru County. The findings further indicated that 28.9% variance in delivery of health services in Meru County could be explained by the devolved healthcare system. Devolved medical supply ($\beta4 = 0.239$) was found to be the most critical component of the devolved healthcare system while devolved leadership ($\beta2 = 0.120$) was the least important factor. None of the null hypotheses was rejected. It was concluded that the delivery of healthcare services was pegged on the availability of funds to procure medicine, remunerate workers and ensure the daily operation of health facilities. We also concluded that good corporate leadership could enhance service delivery. In order to improve delivery of health services, it was paramount to have well-remunerated, motivated, and adequate number of staff. Medical supply system was inferred to be very fundamental in delivery of healthcare services. The devolved health facilities should seek supplementary sources of funds to address their operational costs. They should also ensure prudent leadership, which advocates for transparency and accountability. The workforce should be

appropriately remunerated and motivated. Furthermore, the medicine and drug allotment should be prioritized on need basis to avoid stock outs and ensure that health services delivery is not compromised.

Key Words: *devolved healthcare system, delivery, health services, Meru County, Kenya*

INTRODUCTION

Devolution refers to the decentralization of the authority of the central government to a lower level of government such as a state, district, province, county or local government. The form of devolved governments and the extent of devolution of various functions and services vary in various countries. Devolution generally encapsulates the decentralization of various functions to devolved units of governance. Essentially, decentralization is associated with both responsibility and accountability since it involves management of resources such as the health workforce (nurses and doctors) and finances (Williamson & Mulaki, 2015). In line with Regmi (2010) as was cited in Nyongesa, Munguti, Odok and Mokua (2015), devolution involves a wide range of events whose results include transfer of decision-making, authority, and "power" to the grassroots governments.

Successful devolution is associated with far-reaching benefits. As per the findings of Regmi (2010), an improvement in the management, access, and utilization health services in countries where devolution has been effectively managed. In the same breadth, it is postulated that health facilities in such countries have adequate health staff, drugs and other medical supplies are ever available, and patient needs are timely attended to. Against this backdrop, however, in some countries there exist crucial challenges in spite of an elaborate implementation of decentralized healthcare (Okorafor & Thomas, 2007). The challenges in this respect include expenditure queries manifested in delayed and/or inadequate disbursement to various health facilities where favoritism and political networks take precedence. The foregoing challenges oblige public health facilities to resort to extraneous ways of generating requisite funds (Bossert, 2003)

Decentralization of healthcare in European countries has had diverse outcomes. It has been reported efficiency of service delivery; patient-centered health provision, the capacity to innovate, and a boost in cost consciousness are some of the positive outcomes of decentralization in county councils. Another gain of decentralization is improvement in the accountability of local, regional, and higher authorities (Jommi & Fattore, 2003). According to Arrowsmith and Sisson (2002), decentralized further resulted in the change of the organizations of the operations of hospitals such as working times and boost in the implementation of healthcare strategies on a needs basis (Jervis & Plowden, 2003). However, in relation to healthcare decentralization there has been great concern in some European countries particularly in respect of inequity (Jommi & Fattore, 2003).

Under the sphere of the United Kingdom (UK) are four autonomous countries, which are Northern Ireland, Wales, England, and Scotland. The devolution particularly of the healthcare

was initiated at the end of the 20th century. A report commissioned by the Nuffield Trust, which has had an interest in the devolution system of healthcare industry of the United Kingdom (UK), underscored the fact that the aforementioned four countries have followed diverse paths in healthcare since it was devolved (Connolly, Bevan & Mays, 2010). The report further indicated that the benefit to patients vis a vis the taxpayer investment varied considerably. It was further stated that Wales, Scotland, and Northern Ireland received more funding than comparative areas in England. However, the three countries were more likely to have worse performance on waiting time and crude productivity of their healthcare workforce. According to the report, it was surprising that there was inadequate scrutiny of the productivity of healthcare across the four nations, notwithstanding the stringent economic climate, and the extent of funding of public health services in the devolved nations by England's taxpayers (Connolly et al., 2010).

In Pakistan, the government introduced devolution in 2001 after the military regime promulgated local government plan in 2000. The aim of the promulgation was to expand democracy to local levels in addition to increasing accountability and improving service delivery to residents, which includes healthcare. In tandem with devolution, delivery of most healthcare services was decentralized from the provincial administration to districts (Ansari et al, 2011). A report compiled in 2007 inferred that devolution had not realized the intended changes in health indicators. It also pointed out to persistent challenges in implementation of devolution in Pakistan (Social and Development Centre, 2007). In addition, it was reported that major provincial government responsibilities had been devolved to district governments. However, the transfer of responsibilities was not accompanied with transfer of requisite funding. This was in cue with a 2007 health system review mission commissioned by the World Health Organization (WHO), which reflected a mixed picture in respect of decentralized health services. The review mission recommended an improvement in planning and managerial skills at both provincial and district levels of governance to execute their roles and responsibilities well (WHO, 2007).

According to WHO (2014), Sub-Saharan Africa (SSA) faces an array of public health problems. A strong healthcare system and workforce that can deliver health care services reliably and consistently are thus required to address these challenges. However, the region lacks well-equipped education systems to train healthcare professionals to tackle to the drawbacks of the 21st century (WHO, 2015). The WHO advocates for a transformative agenda for the education of healthcare personnel and or workforce and underscores the importance of competencies particularly in reference to patient-centered care (Hurley, Doumbia, Kennedy, Winch, Roter, Murray, & Harvey, 2018).

A number of countries in Africa have already adopted health system decentralization to address managerial, operational, and political, managerial issues in regard of systemic efficiencies and cost effectiveness. Politically, decentralization is likely to reflect the concerns of the citizens at the grassroots. Managerial challenges, on the other hand, devolution are bound to minimize bureaucracy and red tape that is often associated with lengthy execution of decisions made by centralized government. In terms of operations, decision-making should be rapid and should

occur much closer to the workplace, thus enhancing the quality of leadership of management and boosting employee morale. South Africa and Rwanda are a case in point. Rwanda has indeed transferred several functions from the provincial administration to local governments. South Africa was encouraged to pursue the Rwanda's devolution model. South Africa's model has hitherto reached the provincial level but is yet to cascade down to lower levels of governance (Watts, 2008).

According to Hendricks, Seekoe, Roberts, Buch, and Bossert (2014), the health system in South Africa has already been structure with significant level of decentralization. It is a requirement for several further steps to be undertaken in decentralizing the country's health system in tandem with the creation of District Health Authorities. In the same breadth, it is held that failure to properly design and/or effectively implement, decentralization is likely to occasion increased inequalities and inefficiencies in the delivery of health services thus creating new problems while exacerbating existing ones.

In 2010, Kenya promulgated a Constitution that replaced the then powerful centralized from of government with a two-tiered form of governance (Centre for Health Solutions – Kenya, 2014). Essentially, the Constitution created devolved form of government, which established 47 Counties that assumed the geographical boundaries of districts at independence. The Counties are government by their own, relatively autonomous governments particularly in respect of budgetary allocation including for healthcare. The healthcare system in Kenya is one of the devolved functions to County Governments (Republic of Kenya, 2014; Netherlands Enterprise Agency, 2016).

The Constitution of Kenya 2010 also devolved health functions to the 47 counties across the country including Meru County. In the devolved arrangement, the National Government has the mandate of formulating health policies in addition to coordination, technical assistance, and capacity building to the County Governments in relation to the same (Republic of Kenya, 2014). It is further asserted that, the foregoing strategy is alive to the transformations brought about by the implementation of the Constitution, which has unprecedented implications for healthcare workforce. In reference to budgetary allocation, the health sector received about 40% of the public funding at County level in the 2012-2013 budget, which translated to about KSh 54 billion. Further statistics indicated that the national healthcare budget was increased and that about 33% of the said budget was devolved to County governments in the 2013/2014 financial year. However, the available data showed a decline in public expenditure on health in the same year. This was interpreted to mean that not all funds budgeted for health was actually spent to extend healthcare services (World Bank Group, 2014).

According to a report by Centre for Health Solutions (CHS), challenges of devolved functions including the healthcare have emerged a poor working conditions, poor management, fear for ethnicity, delayed salaries, and poor distribution of resources among other problems (CHS, 2014). It is further stated that after the healthcare was devolved, there was a general fear among

healthcare staff in respect of their job security. In concurrence, devolution of health services to counties has raised growing discontent within the medical fraternity characterized by key public health personnel opting to exit the public service for greener pastures in not-for-profit of private sectors, and in some instances they have quit as practitioners altogether (Republic of Kenya, 2014). According to (Kimbati, Kiio & Towett, 2013) this issues has occasioned many implications for healthcare workforce. It was thus imperative to analyze the implications of devolution on delivery of healthcare in devolved governments in Kenya.

STATEMENT OF THE PROBLEM

There has been conspicuous disparity between the healthcare budgetary allocation and the funds actually spent to dispense health services at County levels. This is exemplified by the increment in healthcare budgetary allocation to about 67% in the 2013/2014 financial year. Yet, this did not translate to the funds eventually improving healthcare (World Bank, 2014). In respect of medical equipment, it is evident that devolution had improved their condition and increased their number. However, access to devolved healthcare has been significantly low. Gimoi's (2017) study found that most health facilities served between 5000 and 10000 people on average, which is against the projected 30,000 people. Moreover, according to Waithaka (2013), unrest of health staff has been a thorn in the flesh of county governments thus affecting health service delivery. Kiambati et al (2013) further noted that devolution of health services has resulted in growing discontent within the medical fraternity with personnel preferring to leave the public service system for green pastures elsewhere or ceasing to be health practitioners altogether. The foregoing illustrates a clear disconnect between the expected benefits of devolving the healthcare and facts on the ground regarding delivery of health services. Meru County, on the advent of devolution was among the nine counties in the bottom third in Kenya for over 50% of the 16 county-level health input indicators, suggesting that it its capacity to deliver healthcare services to residents under the devolved system is questionable (Barker, Mulaki, Mwai & Dutta, 2014). Thus, the government has devolved almost the entire health function. However, this has not been accompanied by sufficient pertinent human resource, technical, financial and leadership support. The various local studies pertinent to devolved healthcare (Kiambati et al., 2013; Waithaka, 2013; Gomoi, 2017; Makheti, 2017) have not adequately articulated how devolved healthcare system have influenced delivery of health services in Kenya particularly in reference to Meru County. It is against this backdrop that this study was conceived with the view of bridging the identified knowledge and research gaps by examining the influence of devolved healthcare system on delivery of health services in Kenya by focusing particularly on Meru County.

GENERAL OBJECTIVE

The general objective of the study was to evaluate the influence of devolved healthcare system on delivery of health services in Meru County, Kenya.

SPECIFIC OBJECTIVES

1. To examine the influence of devolved healthcare financing on delivery of health services in Meru County.
2. To analyze the influence of devolved leadership on delivery of health services in Meru County.
3. To assess the influence of devolved healthcare workforce on delivery of health services in Meru County.
4. To examine the influence of devolved medical supply system on delivery of health services in Meru County.

EMPIRICAL REVIEW

Financing and Health Service Delivery

Financing the public health sector is very crucial since it is bound to improve services delivery. In a study conducted in Canada, Jiminez and Smith (2005) examined heath care decentralization and how it impacts on health outcomes. The purpose of the study was to investigate the hypothesis that decentralization was likely improve population health. A total of 10 provinces of Canada were used as a case study. The findings of the empirical analysis indicated that decentralization in Canada influenced public policy positively in respect to improving the health of a population. The study further established that provinces regulate health facilities and other health institutions, where they decide the financing schedules with health professionals. It was further found that provinces set global budgets for hospitals within their jurisdictions. The decentralized health facilities in Canada were also found to rely on user fees in their financing.

Sparrow et al. analyzed the effects of decentralization of financing of health care financing in Indonesia on maternal care in 2015. The study examined how the sub-national health care financing initiatives in several districts in Indonesian vary and assessed the influence of the stated local schemes on provision of maternal care over the period between 2004 and 2010. Pseudo panel data were employed. The findings of the research study showed an increase in antenatal care visits after implementation of district schemes. Moreover, an increase in the accessibility of basic and recommended antenatal care services by households that lack the national health insurance financing scheme also increased significantly. Finally, schemes such as the Antenatal Care (ANC) package had a positive effect on the local financing schemes for healthcare in the study area.

Health budget decentralization and health outcomes are evaluated in the context of Chad. This was in a study by Douzounet and Yogo (2015) whose primary objective was to analyze both the direct and indirect effects of health budget decentralization on health outcomes in the country. Statistical panel data of 23 regions in Chad for a period spanning from 2007 to 2014 were utilized. The study results indicated that in general, decentralization of the health budget improved health outcomes. In particular, it was established that increasing the regional health

budget by 5% increased the deliveries by assisted births by 0.25% margin. In addition, the study found that increasing the regional health budget by 10% was bound to reduce the number of malnourished kids by 1.35%.

In Kenya, Koikai (2015) checked the effect of devolution in Nakuru County on healthcare in Nakuru County. Its aim was to examine how the various components of devolution affected delivery of health services in Nakuru County. A quasi-experimental research design was adopted in rating the performance of healthcare prior to and after devolution. Health care financing was one of the key aspects that were examined in relation to how they affect healthcare delivery. According to the study, that broad-based health financing steered the other aspects of health system strengthening. More than 60% of the respondents disputed that health financing for health had improved. Moreover, it was found that health financing had worsened under a devolved structure of governance.

Decentralization affected planning and financial management in the health sector to some extent (Tsofa et al. 2017). The study to the effect, a case study was done in Kilifi County, which is located at the Coastal region of Kenya. The objective of the study was to evaluate the relationship between decentralization on health sector planning and financial management in the County. This case study (qualitative) found that devolution had improved community involvement and prioritization of health services, budgeting, and health sector planning in at the local level. This subsequently led to equity in local resource allocation. The study also found that there was some degree of recentralization of the management of finances from health facilities to the County level.

Leadership and Health Service Delivery

Leadership in the management of public health facilities is an issue, which cannot be understated. In this regard, Mora & Ticlau (2009) evaluated leadership and management in health care systems. The study examined leadership the perceptions of leaders in Cluj County Children's Hospital in Romania and analyzed both the role and functions of management and leadership in delivery of healthcare services in Romania. In particular, the study examined the new legal framework had a managerial component and whether leadership could be an important aspect in changing the system. According to the study results, the authors found that perceptions of managers and their leadership styles on their leadership style were inconsistent. The perceptions of medical staff were similar.

In India, a study conducted by Panda and Thakur (2016) centered on the performance of healthcare systems after decentralization. The reviewed the difficulties, dimensions, and the derivatives in India and acknowledged that decentralization objects had a positive impact on management processes and health outcomes, and has administrative, political, and financial connotations. The study involved a review of existing literature through web-based search algorithms of Google Scholar and PubMed. In total, 180 pertinent articles were analyzed. The study findings indicated that decentralization in public health sector is associated with multiple

facets. In this respect, it was noted that at facility level, in the governance of health unit successfully would be subject to factors such as leadership capabilities, community involvement, or genuine interests of decision makers.

Decentralization and governance in Ghana are two crucial aspects. Their importance necessitated a study, which was conducted by Couttolenc (2012). In particular, the study examined the effects of decentralization on the health sector. The study findings showed that the country has put in place many important building blocks over the years to have a truly decentralized health system. However, it was found that the effectiveness of these building blocks have diminished and their effectiveness hampered by the lack of strong policy and regulatory frameworks for regulatory conflicts, health, and duplications that have occurred due to fragmented health systems of staff management, poor budgeting or financing, and a weak capacity to manage the devolved system of health.

Governance is a crucial element in the management of health facilities in Kenya. A study by Muchomba and Karanja (2015) examined the influence of devolved governance on performance of the Kenyan health sector. One of its specific objectives was to determine the relationship between the performance of the health system and leadership. This was a descriptive survey, which recruited health care providers and patients from both Nairobi and Mombasa Counties. The study demonstrated a relationship between the performance of level IV hospitals and devolved leadership and thus the overall performance of the health sector. Moreover, it was found that majority of the respondents held the view that devolved leadership had an effect on hospital development planning. In tandem, it was established that devolved leadership influenced development planning positively in all the hospitals that were included in the survey.

Barasa et al. (2017) did an investigation into recentralization within decentralization. In particular, the study examined autonomy of County hospitals under devolution in Kenya with a special focus on hospitals at the Coastal region of Kenya. The specific objective was to examine devolution-occasioned changes in hospital autonomy and how the stated changes influenced the functioning of hospitals. A case study (qualitative) was done. The study interviewed county government health managers and hospital managers. Five management aspects were analyzed, that is, finance, human resources, strategic management, procurement, and administration. The study revealed that devolution had resulted in weakened autonomy of the surveyed hospitals in relation to the aforestated key functions. Moreover, it was established that there was subsequent weakening of both the hospital management and leadership, compromised quality of health services, staff insubordination, and compromised healthcare among other challenges.

Healthcare Workforce and Health Service Delivery

The staffs of public health facilities play a key role in the delivery of pertinent healthcare services. A study conducted by Ansari et al (2011) centered on public perceptions, devolution, and the experience of health services in Pakistan. This was a cross-sectional survey between 2002 and 2004 in the country. Essentially, the objective was to evaluate the influence of

devolution in Pakistan on health services from the public's perspective. Respondents were recruited via random cluster stratified sampling. The study established that members of the public avoid government health facilities mostly due to bad treatment from the healthcare workforce, and unavailable or poor quality medicines. Therefore, the handling of patients by the public healthcare workforce influenced how the public sought medical services from government-funded health facilities.

In Serbia, a study conducted by Milicevic, Vasic and Edwards in 2015 focused on mapping the governance of health human resources. It was found that Serbian districts with exception of Sremski had surpassed the 59.4 availability threshold for skilled nurses, midwives, and physicians for every 10,000 inhabitants. The study, however, observed that there were bottlenecks in relation to financing and the distribution of human resources in the country with the stated bottlenecks were found to adversely affect both the provision of healthcare services and the implementation of healthcare projects by municipal governments. Moreover, the study found that there was significant differences between the district accessibility of healthcare workforce and the national average.

In Kenya, a study by Miranda (2017) assessed satisfaction levels of patients in a County referral hospital. It specifically focused on Busia County Referral Hospital in Western Kenya. The primary objective was to examine level of service satisfaction on inpatients attending the aforestated health facility. A descriptive cross-sectional study was done. A questionnaire was used to facilitate data collection. It was revealed that the inpatients were highly satisfied with both procedures and practices. Ninety-seven per cent of the surveyed patients indicated their willingness to return to the hospital for healthcare. Moreover, it was established that patients who visited the hospital for inpatient services were satisfied with the increased number of physicians.

Locally, there was further examination of the challenges related to the devolved health sector in Kenya (Kimathi, 2017). The aim was to understand whether they were teething problems or systemic contradictions. The study noted that one of the rationale for devolving health services to the grassroots was to enable county governments to come up with innovative interventions and models, which could be aligned to the unique health needs in respective counties, encourage effective participation of the locals, and make quick and autonomous decisions on management and resource mobilization. The study found that, counties were facing herculean challenges including human resource deficiency. Ultimately, the foregoing challenges were bound to result in stagnation of healthcare, and in some cases, a reversal of the gains all made under the hitherto centralized government health services.

Medical Supply System and Health Service Delivery

The supply of essential medicines and related equipment to a significant extent influence delivery of health services. On the same perspective, a study commissioned by the WHO (2011) established that unavailability of medication, especially in public health facilities, was major barrier for the access to medicines. The study also found that availability of generic medicines in

the public sector across the WHO regions was less than 60% and ranged from 32% to 58% in the Eastern Mediterranean and European region. In contrast, the availability of generic medicines in the private sector was higher than in the public sector across all the studied regions. However, it was revealed that availability was still lower than 60% in Africa, the South East Asia Region, and the Western Pacific regions

Drugs availability is very paramount since the stock out of the same can spell possible deaths to patients. In this regard, a study by Tumwine et al. (2010) analyzed availability and expiry of essential supplies and medicines during the 'pull' and 'push' drug acquisition systems in a rural hospital in Uganda. The objective of the study was to assess the impact of 'pull' and 'push' drug acquisition systems on the availability and reduction of expired medical supplies and essential medicines and to determine factors that affect availability at Kilembe Hospital. The results of the study indicated lack of transport, inadequate training, and inadequate funding contributed to availability of essential supplies. The findings led to the inference that the 'pull' system enhanced availability of essential medicines and reduced the volume of expired medical supplies.

Locally, Tsofa et al (2017) examined the effects of devolution on commodities hospital management and the healthcare workforce. Specifically, the study evaluated the early implemented experiences in Kilifi County, Kenya. In reference, to one of the major elements of the health system, which is management of medical supplies and essential medicines, the study analyzed the effect of early implementation of the system at county level. The study established that similarly to other county functions, management functions of EMMS were rapidly transferred to the counties prior to putting in place requisite county-level structures and capacity. Concerning EMMS, the study revealed that devolution was characterized by considerable delays in procurement, which consequently resulted in long stock-outs of essential drugs in devolved public health facilities. Nevertheless, the study observed that when the counties got the capacity to procure drugs, there was reportedly better order fill-rate particularly when juxtaposed against the period before the health function was devolved.

On the same breadth, Oketch (2017) analyzed devolution of public health care services in Kenya and its implication on universal health coverage. The study empirically analyzed how devolution has influenced access to universal health in respect to quality of care, equity concerns, and allotment of health resources such as medical supplies and essential medicines. The results of the study pointed out that stock-outs of medical supplies and drugs were some of the leading challenges. Other equity concerns, according to the study, included dilapidated of inadequate health infrastructure and skewed distribution of health resources. The study's recommendations were the need for enhancing the pharmaceutical management information system in order to have both reliable and accurate evidence premised on medical supply needs and the estimation of essential medicines.

THEORETICAL FRAMEWORK

Sequential Theory of Decentralization

Tulia (2004) proposed the sequential theory of decentralization. The theory states that consequences of decentralization can range from substantial to insignificant. Three facets characterize the theory. These describe decentralization. Firstly, it is stated that decentralization is a process. Secondly, decentralization influences territorial interests of the bargaining power of actors. Thirdly, decentralization incorporates policy feedback effects in the analysis of bargaining situations.

The theory covers the various types of decentralization, which include, political, fiscal, and administrative, and is a major determinant for the fruition of balance of power in the intergovernmental sphere (Tulia, 2004). Relative to this theory, Shah (1994) and Weingstan (1995) posited that decentralization results in an improvement in fiscal efficiency, political participation, administration, and accountability. However, critics argue that soft-budget constraints, bureaucracies, clientalism, and macro-economic instability are a result of decentralization (Rodden, 2000; Rodden & Wibbels, 2002). According to Tulia (2004), albeit the fact that there is no consensus on the positivity and negativity of decentralization, it is assumed that an increase in the power of sub-national officials confounds decentralization and its outcomes being either good or bad.

The sequential theory of decentralization could be adopted to explain the concept of devolution and delivery of healthcare services. Similarly to Tulia's (2004) assertion that there exists three forms of decentralization (political, administrative, and fiscal), in Kenya, devolution is characterized by decentralization of political power to counties (governors and members of county assemblies), administration or leadership (of various devolved public functions including healthcare), fiscal policies as manifested to the budgetary issues and financial disbursement to the counties. In tandem with this theory, the administrative, fiscal and leadership, functions are not devolved in entirety to the devolved health function. This is evident by the reliance of devolved health facilities leadership on the policies made by the national government touching on the workforce and their operating environment.

Systems Theory

The systems theory was proposed in 1940's by von Bertalanffy and later advanced by Ross (von Bertalanffy, 1968) under the general systems theory, and Klir (1991) under facets of systems science. The systems theory state that a system is made of several components (sub-systems) that work in synergy. The theory also holds that real systems are open and tend to interact with their environments. It postulates further that the systems theory revolves around organizations, wholes, and systems (Swanson & Holton, 2001) and covers multiple disciplines on parts, wholes, connectedness, and organizations and how these disciplines relate with their environments.

Further, in the systems theory, there is conceptualization on how organizations should be viewed as a system. For a deeper understanding, for instance, it provides important information on the organizational behaviors and structures and the processes and nature of the changes in systems (Swanson & Holton, 2001). Therefore, through the systems theory, researchers can have a better understanding of the basic structure of systems, which include the interrelation between components with the environment, arrangement of parts, and the purposes of the design if the system in question. Every organization is a system. As such, all actions taken in the system can affect people and or other parts of the system (Wyckoff, 1998). Though the theory was developed around biological concepts, it has been applied over the years in other various disciplines including physics, technology and social sciences). Even with devolution, it is expected that the health systems building blocks all work together and lead to effective delivery of healthcare services.

RESEARCH METHODOLOGY

Research Design

A descriptive research design was adopted. This was based on the argument that the current study purposed to have a precise description of devolved healthcare system and health services delivery, and the association (or relationship) between these two study constructs. In addition to adopting a descriptive survey design, the study used a quantitative approach. This was premised on the assertion that the study sought to collect quantitative data using a structured questionnaire in tandem with all the study constructs characterizing devolution and health services delivery in Meru County. According to Kothari (2004), quantitative approach can be narrowed down to inferential approach that enables drawing conclusions regarding relationships in a given population.

Target Population

Target population refers to an aggregate of subjects sharing common or similar characteristics. In respect of this study, all the healthcare managers in Kenya constituted the target population. Narrowing down from the target population is the study population which is referred to as a subset of the target population which a researcher can get. The members of Sub-County Hospital Management Committee and Meru Level V Hospital Committee totaling 168 comprised the study population.

Census Design

According to Kothari (2004), census design is an approach where all member of the study population constitutes the unit of analysis. In other words, all the subjects or individuals constituting the accessible population are approached to be participants. Therefore, all the aforementioned committee members totaling 168 were projected to take part in the study; this meant that all the members who are part of these committees were eligible to participate in the study. Our preference for the design was guided by the relatively small population and our aim

of maximizing reliability of tools and results. In this respect, the approach eliminated the sampling bias and sampling error and as such enhanced the generalization of findings to the study or target populations (Cooper & Schindler, 2003).

Research Instruments

According to Mugenda and Mugenda (2003), questionnaires are the most suitable tools for facilitating collection of data in surveys with dispersed populations. Therefore, given that this study has a relatively large population (168) which is widely dispersed across the 9 Sub-Counties constituting Meru County and the Meru Level V Hospital, structured questionnaires consisting of exclusively close-ended items were employed to aid in data collection. The use of questionnaires was delimited to the members of the Meru Level V Hospital Management Committee and the 9 Sub-County Hospital Management Committees. The choice of the structured questionnaires was founded on the fact that the study adopted quantitative approach, which is synonymous with numerical data. Structured questionnaires enabled collection of categorical data, which were numerical in nature. In addition, the data items were on a 5-point Likert scale and were ensured to be both precise and explicit in order to mitigate probable ambiguity to the projected respondents.

Data Collection Procedure

Requisite permits, consents, and approvals were sought before data collection. Authority to do the research the study was also attained from the Graduate School, KEMU and a research authorization/permit letter from the National Commission for Science, Technology, and Innovation (NACOSTI) were sought. Finally, approval to do the study in Meru County was requested for County Government of Meru: Department of Health, which wrote to all the medical superintendents of the health facilities from which respondents were projected to be drawn. Having determined both the reliability and the validity our study-specific data collection tool, the principal investigator disbursed questionnaires, which were self-administered. The respondents were granted a maximum of five working days to respond to closed ended questions and resubmit for analysis. Upon collection, the questionnaires were screened and data analysis done.

Data Analysis and Presentation

Data was screened for completeness and variables with missing or compete date deleted. Cases with >20% missing responses were also eliminated from analyses. The rationale of data cleaning was to make sure outliers, which often compromise the authenticity and reliability of study results, were reduced. Version 24 of the Statistical Package for Social Sciences (SPSS) tool was used to analyses data. Data analysis encompassed exploration of descriptive and inferential statistics. The former constituted measures of distribution such as frequencies and percentages. The Pearson's correlation was used to compute inferential statistics multiple regression analyses used to identify predictors of health service delivery. The results of analyses were presented in

tables that were accompanied by pertinent interpretations and discussions. The following empirical model was adopted.

$$\mathbf{Y= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_{4+} \varepsilon}$$

Where: **Y** represents 'Health Service Delivery'; $\mathbf{B_0}$ represents 'Constant'; $\mathbf{X_1}$ represents 'Devolved Healthcare Financing'; $\mathbf{X_2}$ represents 'Devolved Leadership'; $\mathbf{X_3}$ represents 'Devolved Healthcare Workforce'; $\mathbf{X_4}$ represents 'Devolved Medical Supply system'; $\boldsymbol{\varepsilon}$ represents 'Error Term'; $\boldsymbol{\beta_1}$, $\boldsymbol{\beta 2}$, $\boldsymbol{\beta_3}$, $\boldsymbol{\beta_4}$ represent 'Regression Coefficients of Predictor Variables

RESEARCH RESULTS

Devolved Health Care Financing and Delivery of Health Care Services

It was discovered that the members of the Sub-county hospital management committee were not sure whether the health facilities mostly obtained significant funding from donors. It was further unclear if the health facilities rarely received minimal funds from private corporate bodies. It was disagreed that there was always equitability in disbursement of funds to county health facilities. The members of the said committee further disputed that funds disbursement to the health facilities were always executed timely and that all health facilities had income generating activities that brought significant revenue. It was further observed that the funds disbursed to the health facilities were always not sufficient to cater for the hospital budget and that the health facilities did not often receive significant funding from donors. The inferential results illustrated that there was a high chance that enhancing devolved health care financing would largely improve delivery of health services (($r = 0.321^{**}$; $p < 0.05$).

Devolved Leadership and Delivery of Health Care Services

It was believed that the management of the facilities was up to the task. The managers of the health facilities were always held to account for the operations of the entities. It was however unclear if there was always political interference in decision making process in the facilities. It was not conclusive on the argument that the county's plans and visions around the health sector for the future were communicated clearly to the facilities' managers. Furthermore, it was not clear if managers of the health facilities rarely faced conflict of interest in managing the facilities or not. On the same contrast of devolved leadership, it was disputed that the administration of the health facilities was rarely executed in a transparent manner. It was also vague on whether the administration of the health facilities hardly faced difficulties in managing finances disbursed to them. There was a positive, moderately strong and statistically significant relationship between the devolved leadership and delivery of health care service ($r = 0.396^{**}$; $p < 0.05$). Sound leadership could improve the way services were delivered at the surveyed health facilities.

Devolved Health care Workforce and Delivery of Health Care Services

The surveyed members of the Sub-County hospital management committee concurred that the healthcare workers had all requisite skills and expertise to undertake their responsibilities and that the facilities' management was hardly involved in recruitment of the devolved healthcare staff. It was nevertheless not clear if the healthcare members were always remunerated as per their job group placements. Moreover, it was disagreed that the healthcare members' recruitment was often done regularly, that is, at least every year. It was further disputed that members' promotion was always effected on merit. The surveyed members of the committee disagreed that the members' promotion was always done regularly, that is, at most in every 3 years. The members disputed that the facilities were always adequately staffed. There was a significance chance that devolved health care workforce would enhance delivery of health services in Meru County ((r = 0.487; p < 0.05).

Devolved Medical Supply System and Delivery of Health Care Services

It was generally admitted that there were always regular cases of drugs stock-out in the facilities. It was however unclear whether medicine stocked in the health facilities were always of high quality. The surveyed members were indifferent on whether the facilities were always in a position to order medicines directly from KEMSA even with the devolved healthcare system. It was further not clear if the medicine allotment was always premised on need basis of recipient health facilities or not. The surveyed members disagreed that the health facilities often had adequate capacity to address all health needs of patients. It was also disagreed that all health facilities in Meru had proper and adequate medical infrastructure. There existed a positive, strong and statistically significant relationship between medical supply system and delivery of health care services (r = 0.486; p < 0.05).

Delivery of Health Care Services

It was agreed that the healthcare workers were always ready to offer requisite health services and that the number of patients seeking services from the health facility had greatly increased since healthcare was devolved. The surveyed members were unsure whether the health services provided in the facilities were always accessible, acceptable, affordable and available. It was further uncertain if the county government often supervised delivery of health services in the facilities or not. Furthermore, the members were not sure whether the waiting time required to serve patients had greatly reduced since healthcare was devolved and that the payers (such as the NHIF and other insurance firms) hardly affected the delivery of health services in Meru. The views that the suppliers of the facility rarely had influence on the delivery of health services and that there were rarely complaints lodged by patients in the facility were inconclusive. It was disagreed that the Ministry of Health was always involved in all health service delivery projects in the facilities. Further analysis depicted that 34.1% of the variation in delivery of health services was attributed to devolved health care financing, devolved leadership, devolved health care workforce, and devolved medical supply. Devolved medical supply systems were the most

important of all the four elements in that it could largely improve the delivery of health care services in Meru County.

INFERENTIAL RESULTS, INTERPRETATIONS AND DISCUSSIONS

The Pearson Product Moment Correlation Coefficient (PPMCC) was used to illustrate the link between each of the aforestated independent variables and the outcome/dependent variable. In addition, in order to ascertain the level to which our independent variables influenced service delivery, multiple regression was used.

Relationship between Devolved Healthcare Financing and Delivery of Health Care Services

The study examined the relationship between devolved health care financing and delivery of services regarding health care. The results of PPMCC are illustrated in Table 1.

Table 1: Correlation between delivery of health services and devolved heath financing, leadership, workforce, and supply chain system

	Delivery of Health Services	
	Pearson 's correlation	**P**
Devolved Health Financing	0.321	0.016
Devolved Leadership	0.396	0.002
Devolved Healthcare Workforce	0.487	<0.01
Devolved Medical Supply System	0.486	<0.01

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

The results displayed in Table 1 indicate that a positive, weak yet statistically significant relationship existed between devolved health care financing and delivery of health care services ($r = 0.321$; $p < 0.05$). Interpretatively, there was a minimal but substantial probability that devolved health care financing would improve delivery of health services in Meru County. Therefore, County Governments and entities entrusted with managing devolved health facilities should emphasize on elements essential in health care financing such as the cost of financing, the ease of access to finance and the prioritization of financially constrained departments. Such would possibly result in improvement of health services delivery. These results corroborate the observations made in a previous empirical research study by Hartwig et al, (2015). The latter study had indicated that financing through healthcare schemes facilitated access to healthcare services, which included antenatal services amongst other critical services. Similarly, the results of the present study mirrored findings made in a past study where it was established that healthcare budget decentralization (associated with financing) influenced health outcomes in Chad (Douzounet & Yogo, 2015).

Relationship between Devolved Leadership and Delivery of Health Care Services

It was noted, in Table 1 that a positive, moderately strong and statistically significant relationship between the devolved leadership and delivery of health services existed ($r = 0.396$; $p < 0.05$). The results meant that enhancing devolved leadership was likely to moderately and substantially improve delivery of healthcare services in Meru County. The clarity of goals and vision of the devolved health facilities, prioritization of pertinent issues that may affect service delivery and sound management of operations of the health facilities, which are some of the components of leadership, could enhance delivery of devolved healthcare services when such aspects are monitored. These results tallied with the findings of an earlier local study, which had established that devolved leadership influenced development planning in hospitals (Muchomba & Karanja, 2015). In extension, devolved leadership affects service delivery in decentralized health facilities.

Relationship between Devolved Healthcare Workforce and Delivery of Health Care Services

As shown in Table 1, it was found that devolved workforce (health care) and delivery of health care services had a positive, moderately strong relationship and statistically significant ($r = 0.487$; $p < 0.05$). This meant that the better the issues of devolved healthcare workforce were addressed the greater the likelihood of moderately enhancing delivery of health services in Meru County. The results underpin the importance of addressing the welfare of the aforementioned staff in order to ensure that the health facilities in the County dispense necessary services more effectively and efficiently. Aspects such as appropriate remuneration and sound working environment that touch on healthcare workforce are likely to impact on the devolved healthcare delivery. The results corroborated earlier findings where it was indicated that how the staff working with government-funded health facilities handled patients influenced how the patients sought services from those facilities (Ansari et al., 2011). Likewise, a local study steered by Miranda (2017) had revealed that the number of physicians working with devolved health facilities affected the level of satisfaction of patients seeking services from hospitals.

Relationship between Devolved Medical Supply System and Delivery of Health Care Services

As showcased in Table 1 a positive and moderately strong and statistically significant relationship between the devolved medical supply system and delivery of health services existed ($r = 0.486$; $p < 0.05$). This meant that there was a likelihood that delivery of health services would be influenced by devolved medical supply system. Improving or strengthening the system that controls the supply of medical supplies was bound to better the delivery of health services in Meru County. A good system is likely to minimize bureaucracies, and ensure effective and efficient procurement, supply, and delivery of relevant medical supplies by KEMSA to the devolved health facilities thus minimizing or eliminating stock out of supplies. Ultimately, this would result in enhanced service delivery by the aforementioned facilities. These observations

concur to earlier findings that county governments, which had the capacity to procure drugs, had a better fill-rate for orders when equated to the duration prior to devolution of public health services in Kenya (Tsofa at al., 2017).

REGRESSION ANALYSIS, RESULTS, INTERPRETATIONS, AND DISCUSSIONS

The study performed further analysis to establish the link between devolved healthcare system and the delivery of healthcare services by devolved health facilities specifically in Meru County. The results and associated discussions are presented in Table 2, Table 3, and Table 4. The first table (Table 1) presents results with regard to the general relationship (R) between devolved healthcare system and healthcare services delivery, in addition to the coefficient of determination (R^2).

Table Error! No text of specified style in document.**2: Regression Weights for Overall Model**

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	.584[a]	.341	.289	.41996

a. Predictors: (Constant), Devolved medical supply, Devolved Health Financing, Devolved leadership, Devolved healthcare workforce

As shown in Table 2, it was evident that a positive and moderately strong relationship between devolved healthcare system and delivery of health services (R = 0.584). This connection was further established to be of statistical significance ($p < 0.05$) as illustrated in Table 3. Moreover, the results shown in Table 4.9 ($R^2 = 0.289$) indicated that 28.9% variance in delivery of health services in Meru County could be explained by the devolved healthcare system. The remaining proportion (71.1%) could be attributed to other factors, which do not constitute the aforementioned system.

The outcomes of the analysis of variance (ANOVA) shown in Table 3 were used to test the significance or suitability of the adopted multiple regression model.

Table Error! No text of specified style in document.**3: Significance Test Results**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.653	112	1.163	6.595	.000[a]
	Residual	8.995	112	.176		
	Total	13.647	112			

a. Predictors: (Constant), Devolved medical supply, Devolved Health Financing, Devolved leadership, Devolved healthcare workforce

b. Dependent/Outcomes Variable (Delivery of health services)

The findings of F-statistics shown in Table 3 illustrate that $F(4, 51) = 6.595$; $p < 0.05$. This means that the sample data collected and analyzed were sufficient in testing the adopted regression model at 95% level of confidence (p value = 0.05). Therefore, further analysis could be done to ascertain the influence of devolving healthcare system on delivery of health services

in Meru County. The results shown in Table 3 were used to interpret the aforesaid regression model. The multiple regression model used is illustrated below:

$$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_{3+} \beta_4 X_4 + \varepsilon,}$$

Where: Y denoted delivery of health services; β_0 denoted the constant; X_1 represented devolved healthcare financing; X_2 represented devolved leadership; X_3 denoted devolved healthcare workforce; X_4 devolved medical supply system; ε was the error term when there was assumed normal distribution; $\beta_1 \beta_2 \beta_3 \beta_4$ denote independent variable coefficients

Table Error! No text of specified style in document.**: Results for Overall Model**

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
1 (Constant)	1.213	.394		3.076	.003		
Devolved Health care Financing	.158	.120	.170	1.326	.191	.783	1.277
Devolved Leadership	.120	.121	.140	.996	.324	.658	1.521
Devolved Healthcare Workforce	.155	.112	.212	1.383	.173	.548	1.826
Devolved Medical Supply	.239	.145	.262	1.650	.105	.511	1.957

a. Dependent Variable: Delivery of health services

Diagnostic tests were done on the regression model to determine the presence and extent of multicollinearity problems occasioned by the independent variables. The parameters of measuring mulcollinearity are variance inflated factors (VIF) which are reciprocals of Tolerance level (T). The acceptable multicollinearity threshold is VIF equal to or less than 10 (Littell et al., 2000). According to the results indicated in Table 4, it is evident than all the predictor variables (devolved healthcare financing, devolved leadership, devolved healthcare workforce, and devolved medical supplies) returned VIF less than 10. Therefore, the multicollinearity problems were considered to be within the acceptable limits. This means our initial linear regression model (multiple) was adopted without any alterations.

The regression model was substituted as follows.

$$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_{3+} \beta_4 X_4 + \varepsilon,}$$

$$\mathbf{Y = 1.213 + 0.158 X_1 + 0.120 X_2 + 0.155 X_{3+} 0.239 X_4}$$

Interpretatively, one unit change in delivery of heathcare services required that there had to be 0.158 unit change in devolved healthcare financing, 0.120 unit change in devolved leadership, 0.155 unit change in devolved healthcare workforce and 0.239 unit change in devolved medical supply while factors, which were not part of this study, were held constant. The four elements of the devolved heathcare system were fundamental in enhancing delivery of healthcare services in Meru County. It is clear that devolved medical supply ($\beta 4 = 0.239$) was the most critical component of the devolved healthcare system while devolved leadership ($\beta 2 = 0.120$) was the least important factor.

It was further noted that the four components of devolved healthcare system, in combination, had a significant effect on healthcare services delivery ($B = 1.213$, $p < 0.05$). This was interpreted to mean that all the four components of the system when integrated together were likely to substantially improve the delivery of healthcare services in the County. However, no part of the devolved healthcare system, that is, devolved healthcare financing ($B = 0.158$; $p > 0.05$), devolved leadership ($B = 0.120$, $p > 0.05$), devolved healthcare workforce ($B = 0.155$, $p > 0.05$), and devolved medical supply ($B = 0.239$, $p > 0.05$), when examined independent of the others, produced statistically significant effect on delivery of healthcare services. Therefore, the relevant authorities should ensure that all components of the devolved healthcare system are working in unison and with unity of purpose in order to ensure that there is enhanced, effective, and efficient delivery of healthcare in Meru County and other Counties in Kenya.

The fact that, healthcare financing did not singularly affect service delivery signficantly was in tandem with earlier findings by Koikai (2015) that since devolution, financing of devolved health services had worsened under the devolved structure of governance. This could have been attributed to effect of decentralization on planning and management of finances in the health sector (Tsofa et al., 2017). However, the findings of this study departed from the conclusions of a research study that was conducted by Muchomba and Karanja (2015) on the performance of health sector after the introduction of devolved ogovernments in Kenya. Whereas the present study had indicated devoilved leadership doies not infleunce healthcare delivery significantly, the ealier study had noted that devolved leadership significantly affected performance of the devolved health facilities.

CONCLUSIONS

The conclusions emanate from the summarized study findings. The conclusions are presented systematically in accordance with the study constructs that were devolved health care financing, devolved leadership devolved health care workforce and devolved medical supply system.

Devolved Health Care Financing and Delivery of Health Care Services

The study inferred that there was no equitability in the disbursement of funds to the county health facilities. Neither was the disbursement of funds done in time nor were the funds adequate to cater for the hospital budget. It was further concluded that the surveyed health facilities did

not receive adequate funding from donors. Health care financing was paramount in ensuring operations are executed seamlessly without halt. The delivery of quality health care services was pegged on the availability of funds to procure medicine, remunerate workers and ensure the going concern of the health facilities.

Devolved Leadership and Delivery of Health Care Services

Leadership is an integral part in not only ensuring organizational performance but also enhancing service delivery. Sound leadership, especially, in hospitals can ensure that the workforce provide stellar services to patients. The study concluded that the managers of the surveyed health facilities were up to the task and were responsible for the operations of the health facilities. However, the administration of the health facilities was not done in openness and in good faith. The leaders of the facilities were not transparent in their administration work. The political interference in decision making process, management of disbursed funds and communication in respect of the county's visions and plans on health could not be wished away bearing in mind their essence. Good corporate leadership could enhance service delivery at the surveyed health facilities.

Devolved Health Care Workforce and Delivery of Health Care Service

The study concluded that the health care workers had the requisite skills and expertise to undertake their responsibilities. However, it was inconclusive that the health care workers were remunerated commensurate with the job group placement. The management of the health facilities were hardly involved in recruitment of the devolved healthcare staff. On the same line on recruitment, the recruitment of health care workers was not done regularly. Similarly, the promotion was not based on merit, neither was it done on a regular basis. It was further inferred that the health facilities were not always adequately staffed. Competent, well remunerated, motivated and adequate number of staff was noted to be a catalyst in delivering quality health care services.

Devolved Medical Supply System and Delivery of Health Care Services

It was concluded that there were cases of stock-out of drugs in the health facilities. The question of whether the medicine stocked by the health facilities were of high-quality could not be conclusively ascertained. The issues of the allotment of medicine based on need of recipient and ordering of medicine directly from KEMSA were not also conclusive. It was evident that the surveyed health facilities lacked adequate capacity to address all health needs of patients. It was further concluded that the facilities lacked proper and adequate medical infrastructure. The medical supply system of the health facilities in the county faced such challenges in ordering medicine from KEMSA, allotment of medicine and infrastructural capacity. Medical supply system was very fundamental in delivery of health care services

RECOMMENDATIONS

The study made a number of recommendations. In respect of devolved healthcare financing, it was recommended that the surveyed health care facilities should exercise equitability in the allocation of finances. The facilities should also strive to seek additional financing to supplement the traditional income in order to cover operational costs and procure state-of-the-art equipment. Seeking additional funds could be coupled with coming up with income generating activities.

In regard to devolved leadership, it is important for the management of the health facilities to be transparent in administration activities. The entire fraternity of the surveyed health facilities should be transparency, that is, financial transparency and transparency in addressing patient concerns. Transparency and accountability are vital for ensuring better service delivery. In cases of difficulties in management of finances, it would be prudent for the facilities to recruit high qualified individuals in positions concerning finance administration and management. This would avoid mismanagement, embezzlement and would enhance better commitment of funds to prioritized areas.

It is further recommended that the health facilities in Meru County should do appraisal of its human resource in order to determine grey areas that need improvement. The management should further recruit qualified personnel such as nurses and supporting staff in order to avoid gaps in service delivery. The workforce should be appropriately remunerated and motivated. Better remunerated workforce translate to better performance and hence better service delivery. The management should further follow the policy guidelines in regard to promotion and salary rise in the facilities. Stagnation in one position could cause dissatisfaction and adverse delivery of health care services.

In regard to devolved medical supply, it is recommended that the County Governments should, on behalf of the devolved health facilities, put up medical infrastructure necessary to up their service delivery. These infrastructure include well-equipped laboratories and other support facilities. It is also advisable for the facilities to have reliable and high-quality supplies of drugs and medical equipment. Furthermore the medicine and drug allotment should be prioritized on need basis in order to avoid stock outs, thus ensuring reliable supplies.

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