EFFECT OF DIGITAL TECHNOLOGY AS A STRATEGY ON CHILD MORTALITY IN PUBLIC HEALTH FACILITIES IN KILIFI COUNTY, KENYA

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DECLARATION

I hereby declare that this is my original work and has not been submitted to any other academic body.

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This Research project has been submitted for examination with my approval as the Supervisor.

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DEDICATION

This work is dedicated first to God my creator for giving me the strength, vision and perseverance to see it through to the end. To my family for standing with me, being patient with me and encouraging me to complete this work that I began.

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To all I say, God bless you.

ABSTRACT

Background: A strategic plan provides an organization, business or government with a clear roadmap that is requires to pursue and succeed in a specific and focused direction. It allows for setting of performance goals, a means of follow up and evaluation to determine if the desired outcomes are being achieved. Implementation or execution of a strategic plan is by far the most difficult and laborious part of strategic management. It requires a clear focus and willingness and goodwill by management to be able to meet the set objectives. In government and specifically the Ministry of Health, strategic management comes forth as a panacea to be able to bring about positive change, structured systems and high performing personnel and organization as a whole. It forms part of ongoing reforms within the public sector aimed at improving efficiency and service delivery. Objectives: This study looked to determine the effect of digital technology strategy on child mortality in public health facilities in Kilifi County. Methods: A case study design was employed. The target populace comprised of the 143 public health facilities within Kilifi county. The respondents were the persons in charge of maternity facilities within the institutions. A semi-structured form of questionnaire was used to obtain primary data. The response rate was 65.3% based on 17 respondents. Determinants discussed in this study looked at issues to do with knowledge on digital technology as a strategy, information awareness, ability to apply and use digital tools, resource availability as well as evaluation of outcomes. Results: The health care workers in facilities visited seem to have had some knowledge on existence of digital health tools available on smart and feature phones. They also emphasized on the need for inculcation of digital technology strategy to enhance outcomes related to child mortality mitigation. Conclusions: This study was able to establish that digital technology strategy if properly harnessed can allow organizations to quickly establish focused approaches to meeting desired targets and goals and enhance productivity towards achieving desired outcomes. From the analysis undertaken it was clear that there is a strong relationship between awareness on digital tools and their use in an environment. Enforcement and routine follow up on use is key in ensuring proper knowledge followed by consistent use and evaluation . There is a great need for government to sensitize health workers and the whole population within the county through various fora on the presence, availability and usage of health tools so as to be able significantly drive up the possibility of having better outcomes in health. Health care staff need to be properly trained in the use of these tools. Resources and funding need to be availed in good measure to ensure continuous usage of the tools.

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ABBREVIATIONS AND ACRONYMS

CI	Cumulative Index
EPRs	Electronic Patient Records
GCI	Global Competitive Index
GDP	Gross Domestic Product
HDI	Human Development Index
ICT	Information and communication Technologies
ITU	International Telecommunication Union
IMR	Infant Mortality Rate
ITS	Interrupted Time Series
KHDSS	Kilifi Health & Demographic Surveillance System
MOH	Ministry of Health
Mhealth	Mobile Technologies for Health Care
NHIF	National Hospital Insurance Fund
NRI	Networked Readiness Index
OI	Opportunity Index
SAM	Severe Acute Malnutrition
UNFPA	United Nations Population Fund
U5M	Under 5 mortality
WHO	World Health Organization
WFPHA	World Federation of Public Health Associations

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Digital technology strategy offers the capability to develop and implement technology driven digital business models (Reyes, 2018). It is a division of science that focuses on the formation and use of digital and/or computerized devices, systems or methods. It also involves the working principles, standards and processes which apply to the technology industry. Strategy refers to a plan of action tailored to achieve some overall objective and is the art of scheduling and guiding specific operations towards a defined goal albeit under uncertain conditions (Miller and Dess, 1996) . Khelfaoui et al (2022) indicated that within low income countries Governments are being encouraged to consider availability of Information and Communication technology (ICT) and innovations to helped reduce health crisis such as infant mortality. This points to a linkage between digital technology and what positive impact it can have on infant health.

Child mortality describes the probability of a child perishing prior to them reaching their fifth birthday. It is expressed per 1000 live births and includes both neonatal and infant mortality. Substantive progress has been made globally in improving survival in the last three decades. Many millions of children now have better chances of making it than was the case in the 1990s (UNICEF Data: Under Five Mortality, September 2020). Wireless technology is altering the manner in which health care is delivered, the patient experience, and the cost of health care(Wang and Liu, 2009). Mobile devices and mobile health (mHealth) services help with maternal care, chronic disease management, and disease epidemics.

They improve the efficiency and effectiveness of the medical system through patient tracking and reporting, and they extend critically needed health services to underserved areas. This study was anchored on the following theories; contingency theory, systems theory and structuration theory. The contingency theory was advanced by Fred Edward Fiedler the Austrian psychologist in 1964. It avers that the best technique to organize is dependent on the current difficulty and changes present in the environment. Lewin's change management style was formed by Kurt Lewin in 1950s. Substantial changes become disruptive and if not well managed can cause a risk of isolating employees because their workflow becomes fundamentally different.

The structuration theory as advanced by the British sociologist Anthony Giddens, responds to claims by post-structuralism. it avers that the structures that human beings find themselves in are set up for them, and recommends that people are completely free to create their own environment. The Systems theory looks at the ancient growth of technology and emphasizes on heterogeneity and inertia. It stresses the relationship between the object being put up and the social, cultural, political and economic factors surrounding it.

(Wang and Liu, 2009) found that mobile technology and Mhealth services assist in maternal care, managing of chronic disease as well as disease epidemics. (Mwamuye and Nyamu, 2014) indicate that there are four levels of public health facilities in Kenya namely national referral hospitals, provinciall general hospitals, health centres, distrct hospitals, and finally dispensaries.

(Muga et al., 2004) found that government health service is supplemented by privately owned and operated hospitals and clinics and faith-based organisations' hospitals and clinics, which together provide between 30 and 40 percent of the hospital beds in Kenya. This study was motivated by the need to inculcate the use of technology in providing solutions to ever pressing societal needs and integrate the health sector in the country with the fast changing digital space to accelerate mitigation measures that can save our young population and secure the future of Kenya. The most critical and important resource any nation has is its human resource which needs to be protected and nurtured to the maximum possible age to ensure enhanced productivity and growth of the nation.

1.1.1 Concept of Strategy and Digital Technology

The strategy concept has been adopted countless times from the armed forces and is altered for use in industry where strategy is used to link up policy and tactics, between ends and the means. Strategy also refers to the process by which policies are implemented. Henry Mintzberg, in the 1994 volume, The Rise and Fall of Strategic Planning, candidly spells out use of strategy in various styles, most shared being this: Strategy as a plan, or "how," of moving from one place to another.

Mintzberg further contends that strategy arises with time as objectives clash with ever shifting realities thereby a need to accommodate the change. (Tregoe and Zimmerman, 1980) describe strategy as the context by which options that define the nature and path of an organization are made. Porter (1996) suggests that strategy is a viewpoint, a plan, position or pattern. Thus it acts as an important link between policy on the one hand and the tangible activities or outputs on the other hand.

Strategy gives direction to an organization to assist it to attain its goals while reacting to prospects and threats that come up in that setup within which the organization is operating. Managers thus need to be in agreement about the purpose or mission and their ambitions as related to the vision of the organization such that mission and values remain fixed over the timeframe (Kaplan,1993).

Digital Technology is described as the dissemination of messages or forms of communication between a generating and getting devices through the use of a thread of data known as the binary code. It comprises the vigorous networks of objects, persons and organizations that produce, apportion and uphold overt information about the hominid and natural worlds (Edwards, 2010). They characterize an important aspect of professional prospects. Notwithstanding some studies being done on the results of the coded governing of modern life in educational systems and digital data (Williamson, 2015), there is scant detailed scrutiny of the insinuations of digital technologies for expert practice, accountability and teaching.

In the medical field Electronic Patient Records (EPRs) are applied in hospitals in many advanced countries. Critics such as Greenhalgh, Howick & Maskrey (2014) have revealed methodically how EPR software not only bound the groups for analysis and explanation of patients to pre-established records, thus simplifying diagnostics to simple basic menus, but they have also converted proficient physicians into mere clerks to enter data. The researchers argue, these data systems are essentially altering medical work in a direction that was not entirely thought of prior to execution.

In the meantime within the quickly developing area of Mhealth new technologies like the Remotoscop app, made to operate using simple mobile phones to identify ear infection remotely, are moving quickly from models to real products for the market. These products will definitely increase suitability and receptiveness of service.

Kantrow (1980) avers that the past ten years reveal the growing consciousness that managers have of the need to include technological issues within strategic decision making. They thus have increasingly understood that technology and strategy are intertwined. He notes that technology has an inner sense that simply must be measured in a firm's strategic planning. This is that process of creating a perception of the business it is in, classifying its goals and objectives and the long-term guidelines to meet them, and framing tactics of action. Kane (2002) postulates that ICTs possess the means to exploit the multiplier effect of pastoral scarcity interventions by building the capacity of disadvantaged persons with the use of digital technology. The scholars seem to be in agreement to the presence of technology and the ability to use it to enhance and improve outcomes in diverse fields and setups

Digital Technology strategy then concentrates on use of technology to improve industry performance, if that means making new products or re-inventing present methods. Molla (2006) argues that technology is a form of change that is geared to allow institutions to adapt to changes. It thus identifies the path an organization will use to build new competitive advantages via use of technology, and also the strategies to use to accomplish these alterations. It looks at what opportunities management would use to optimize their business.

Health institutions in the developed world look up to digital technology to maximize their efforts, improve processes, deliver fast and effective outcomes and keep track of clients in a more holistic and practical manner than ever before. Adopting technology to drive processes seems the way to go. Globally, many entities within the health sector are embracing and adapting to heavy use of digital technology to meet and surpass the ever changing needs in the health sector.

In Africa there seems to be a rather slow uptake especially in public health and thus the need to understand what needs to be done to operationalize fully and integrate digital technology within public health in Kenya. Measuring digital technology strategy concept covers the transition to a digital society across several metrics. This captures not only penetration of technology but also how it is used (Katz R., Koutroumpis P., Callorda F., 2014). Several components are key and include; access to network, capacity, affordability, usage, infrastructure investment and human capital.

1.1.2 Child Mortality

Child mortality in Kenya is an emerging threat that needs serious attention to ensure that the country falls within global recommended numbers and even better (Muthuri S, Wachira, L, Onywera V, Trremblay M, 2014). Initiatives like the beyond zero campaign by the current 1st lady of Kenya has made great strides in trying to reduce child death. Many children especially in rural setups have many challenges and many do not get to see their fifth birthday. Globally according to the World Health Organization (WHO), 5.4 million kids under the age of five died in 2017.

The danger of a child passing on before reaching the age of five is still occurring uppermost in the WHO African Region. It is given as 74 per 1000 live births. Noting that communication is among the important key factors that spur growth economically in a country, the ability then to utilize mobile technology to step up the drive towards minimum child mortality cannot be gainsaid. Kiongo F. N (2014) puts forth the argument that the proportion of health workers in Kenya to the population concentration is way below the internationally acceptable standards. There is thus need to implement directed actions towards better health care systems that can be able to cater for the populations in the various parts of the country.

1.1.3 Kilifi County

A large proportion of Kenya's population obtains healthcare services from public health facilities. Services offered comprise preventive and promotive as well as curative and rehabilitative. Preventive services look at issues of repetitive vaccinations and ecological activities to regulate mosquito breeding thus reducing malaria spread within the population. According to the UNFPA annual report 2015, advances were made in bringing down infant and child mortality, with total under-5 deaths coming down from 115 fatalities per one thousand live births in 2003 to a low of 52 fatalities per one thousand live births in 2014. Jennifer, Moïsi, Gatakaa, (2011) in their cohort study noted that in the district of Kilifi, Kenya, child mortality has come down significantly most recently. They used cox regression models as the means to identify risk factors and to develop the outcomes.

Nevertheless, only a third of child deaths happen in health care facilities and admittance to hospital nursing for very ill children is deprived (WHO (2019) Patient Safety [fact Sheet]). Preceding figures suggested that kids that were released from hospital had a greater chance of death within the 12-month period after release in comparison to kids within the community with diarrhoea noted to be a significant predictor of excess mortality. The risk factors identified then provided a basis by which an effective outpatient follow up regime could be implemented.

1.1.4 Public Health Facilities in Kilifi County Kenya

According to the ministry of Health (MOH), health facility master list of 2012, about 51% of the hospitals in the county rank as public and are government run. As of August 2018, Kilifi county had 143 public health facilities as per the Kilifi County Government website. These are broken down into 5 hospitals, 14 health centres and 124 dispensaries (Kilifi County government Website, Department of Health, August 2018).

One of the biggest challenges faced by the facilities within Kilifi county is a shortage of essential drugs and health personnel to be able to adequately match the large population domiciled in this area (Kilifi County government Website, Department of Health, November 21). There is a need to enhance and advance the capacity of the public health facilities to meet and exceed the health needs of the population within the county.

1.2 Research Problem

Digital technology strategy offers the capability to develop and implement technology driven digital business models. Frellsen (2016) in her paper titled Confronting the age-old dilemma of maternal death via advanced technology, speaks on how new technologies have surfaced to help confront some of the challenges around obstetric care and as an enabler for both women and health care workers. (Wang and Liu, 2009) infer that digital technology through mobile technology using mobile health (Mhealth) services assist in maternal care, managing of chronic disease as well as disease epidemics. Baig, GholamHosseini and Connolly (2014) noted challenges including breaches linked to safety and confidentiality of data, suitability, cost and reliability that require to be looked into.

Kilifi county spans a large geographical area with inhabitants scattered cross the large expanse of land. The county covers about 12,245.9 square kilometers (Infotrack Research data, January 2020). As of 2019 the population of Kilifi county stood at about one million four hundred and fifty seven thousand seven hundred and eighty seven inhabitants (Kenya National Bureau of Statistics, 2019). The road network is generally okay but several locations suffer from dilapidated infrastructure. During the rainy season the rural areas within the county suffer from inaccessible roads. It thus becomes difficult to get to health facilities and centres and the population needs to make do with bicycle or motorbike transport which at times does prove to be dangerous especially for expectant mothers and infants. A thriving community with healthy children is one of the key indicators of a functioning health system within a community. Though great strides have been made to improve healthcare there is room to do more in far flung locations.

Shukla and Pandey in their study indicate a gap between the availability of technology and uses in the health sector that does need to be looked into. Kiome(1991) found out that mothers belonging to varying status had different child experiences. Oiro (2013) found that there was a positive reception to the system and being effective in information sharing and knowledge improvement among mothers in the reproductive age group. Kiongo (2014) indicated that there was a willingness to learn and use Mhealth tools as end users found it easy to learn.

Wasonga (2015) determined that use of electronic telemedicine, health records, health information systems, mobile health and the internet influenced performance of healthcare projects. Some studies have been carried out with reference to Kilifi County. Bwire (1990) established that there was need for more effort in attending to mothers and infants within the county as well as continuous follow up if child mortality was to be reduced. Areba(2016) recommended that the government should highly invest in modern telephony among other equipment to aid in faster diagnosis and follow ups.

The emergence of the deadly Covid-19 virus has caused a global pandemic situation leaving in its wake a trail of deaths. Use of digital technology via short message services, chat groups and call in services for counselling and information dissemination are all at play in trying to deal with this scourge. All these studies recommend a need for further research on this issue of child mortality. It can be noted however that the research done by several students and scholars have looked at other variables but to the best knowledge of the researcher they have not used digital technology as a key tool or variable in dealing with the issue of child mortality in Kilifi county.

Previous research studies from various researchers locally and internationally seem to lean mostly towards issues such as determination of child mortality or infant and child mortality differentials. Notwithstanding the decline in maternal deaths countrywide, Kilifi County still presents as one among 15 counties in Kenya that add to 98% of the total problem of maternal death (Kilifi County Website news, Nov 2016). Most of the studies done in Kilifi county have looked at determination of child mortality or infant and child mortality differentials. However, none seems to have captured the gap postulated in this study where the researcher seeks to marry strategic management planning in utilizing digital technology as a strategy to reduce child mortality within Kilifi county. This study looked to close the gap of available knowledge by answering the subsequent research question: How can digital technology as a strategy be leveraged to reduce child mortality within Kilifi county?

1.3 Research Objectives

The objjective of the study was to determine the effect of digital technology strategy on child mortality in public health facilities in Kilifi County.

1.4 Value of the study

The result of this study is going to be able to assist several stakeholders in crafting well meaning and actionable tasks and functions towards enhancing and improving quality health care using technology as a key driver. To policy makers this study captures gaps in healthcare provision, causes of the gaps and workable solutions towards bridging the gaps. It is going to also help create better visibility between the urban and rural structures of healthcare for better monitoring.

To practicing managers the study is going to be able to provide a platform by which they can better understand their role towards driving policy and realization of targeted outcomes and how important communications can be as a critical tool of growth and development. It helps create a roadmap and give possible direction on how to solve medical related challenges using current and future technology based aids

Findings herein are useful to the academic community/practice as a pool of knowledge that can be utilized by other researchers to develop further probes and methods as well as aid in innovation of other appropriate technologies that can be harnessed to accelerate and improve efficiency and effectiveness of public healthcare facilities within Kenya and also beyond its borders. They can also be used to craft better Government policies.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section examines the literature on digital technology as a strategy on reducing child mortality. Various theories will be reviewed that augment and inform the study. Literature review will be presented in the various sections within the chapter. Through borrowing from existing literature this chapter then seeks to outline three theories that bring relevance to this study. The section looks at both the conceptual and theoretical framework made use of in the study. It seeks to address the empirical suggestions of prior studies on the area of child mortality in various setups in the world. It seeks to pass on to the reader what knowledge and ideas have been recognized on the topic under study or reserch.

2.2 Theoretical Foundation

A theoretical foundation is the basis through which an idea or notion is made acceptable while at the same time logically viable. This research will be reinforced vide the contingency theory, activity theory, systems theory. This thereby helps in identifying and advancing the conceptual framework of the research with relevant hypothesis and the supporting justification.

2.2.1 Contingency Theory

The contingency theory advanced by Austrian psychologist Fred Edward Fiedler in 1964 postulates thus the most efficient method to manage is dependent on current complexity and unpredictable changes within the environment.

It is amongst the primary theories in the social science arena which started in communication to explain how, during a span of time an idea, product or service attains energy and disperses across a certain population. Kurt Lewin advanced the Lewin change management model in the 1950s. Contingency theory has spawned a new way of looking at organizations and is vital to our grasp of organizational forms.

The essential assumptions of contingency theory point out that establishments are open systems. This means that there is no singular way of organizing; and organizations need to realize a "good fit" between internal systems and external environment. Contingency theory has pursued to frame broad overviews about the official structures that are characteristically related with the use of diverse technologies (Nohria & Khurana, 2010). This viewpoint originated with the work of (Woodward, 1958) who averred that technologies directly regulate variations in such administrative qualities as the width of authority, control being centralized, and validation of rules and procedures.

Contingency theory is said to be stationary and flops at dealing with administrative modification and variation (Galunic & Eisenhardt, 1994). Strategic arrangement may well help companies in choosing a trade-off among the company costs and associated benefits in the market that maintains their customers or partners. The capacity to sustain and keep customers entails a flexibility in meeting customer demands; thus, needs to be founded on a dynamic business procedure. The organizations that benefit from a higher degree of dynamic business capacity will be better equipped to sufficiently react to the dynamic process of identifying the steady variations in their customers' inclinations and thus, avert customer churn (Mansbridge, 2014).

The contingency theory will be significant in this study as it seeks to look into how health systems view the interaction of the organization with the outside environment as important for its existence and success (Freeman & Mvea, 2001). Health systems would be able to benefit immensely from utilization of digital technology to accelerate information gathering dissemination and outcomes.

2.2.2 Structuration Theory

Structuration theory describes structures as instructions and resources prearranged as facets of social systems. The philosophy uses a recursive suggestion of actions inhibited and permitted by structures which are fashioned and replicated by that action. As a result, expertise is not reduced as an artifact, but rather studies how individuals while they interrelate with technology in their practices, bring up assemblies which form their nascent use of that technology (Orlikowski, 1992).

The work of the present-day British sociologist Anthony Giddens, and more so his structuration theory, is widely cited by many Information Systems researchers in their work. Discarding outdated dualistic ideas that look at social phenomena as prescribed either by impartial social forms, that are part of society in totality, or by self-directed human agents, (Giddens, 1990) suggests that structure and agency are a jointly fundamental duality. Therefore social phenomena is a creation of both structure and agency. Communal structure and agency are dependent on each other. Human agents rather count on social structures in their activities. It is these movements that serve to generate and thereafter duplicate social structure.

Giddens classifies three key scopes of structure (legitimation, signification and domination), musing, it may be argued, his previous theoretical interests in the effort of Durkheim, Marx, and Weber. Consistent dimensions of interaction, defined as communication, sanctions and power, are recognized, with which the structural scopes are connected through modalities of interpretive schemes, services, and standards. Structuration theory is critiqued to be complex, involving concepts and general propositions that operate at a high level of abstraction. It aims to improve the application of structuration theory in empirical work by drawing on the experience in information technology (IT) research. The structuration theory is relevant to this study as it seeks to determine how best people interrelate with technology in their ongoing practices to attain best results and outputs.

2.2.3 Systems Theory

Systems theory looks at the historical expansion of technology and media and emphasizes on motion and heterogeneity. It stresses the relationship between the object being constructed and the political, cultural, social and economic factors surrounding it. Key notions include opposite salients when elements of a system lag in growth (Hughes, 1992). Output denotes the goods and services obtainable by an organization. Yields of the system give a validation towards value of the resources being placed into the system. While observing the yields, the whole purpose of the approach need to be re-examined to determine if they are being attained. This involved continuous evaluation and feedback for corrective actions. Response comes from the human resources carrying out the processes (in this case the employees) as well as several other areas impacted by the organization.

Feedback is more often than not done through exploration which measure enhancements in different features of the approach. Schoech (2004), indicates that it is vital for a structure to have a control apparatus which guarantees that data from the organization output is assessed versus the specific targets of the system and be able to give response on this valuation to further advise on the inputs. It assumes that a complex system is made up of multiple smaller systems. This theory is challenged to suggest that variables have some form of equality in extent of impact and control over the business environment.

Systems theory offers a fresh way of looking at administration as it incites executives to relook at their establishments using a broader viewpoint. Accordingly through this theory, it becomes essential to be keen on the interrelations of diverse mechanisms of their organizations and not look at a single thing at a time but as part of an entire system. This theory offers a window into the developments made towards efficiently using technology to meet demands of medical interventions and provision of effective solutions especially to the rural populace.

2.3 Empirical Studies and Knowledge Gap

Digital technology strategies present opportunities through which management and organizations can optimize their business and reap significant gains in efficiency and outcomes. Investing in digital strategies is now becoming a necessity and is being seriously considered and implemented in many organizational settings.

Baig, GholamHosseini and Connolly M (2014) undertook a thoughtful review of progressive applications including vital sign monitoring, blood glucose monitoring and the use of in-built camera based smartphone sensor applications. They undertook to examining challenges and serious matters with reference to use of smartphones in healthcare like efficiency, reliability, variability of the mobile phone platform, energy efficiency, user interface, costs, quality of medical data, security and importantly confidentiality. Through their study they found out that mobile based applications were extensively advanced in current years with more use by healthcare specialists and patients.

Mounts, Miner and Mbarika (2011) undertook a study on the Association between information and communication technologies and child mortality in Sub-Saharan Africa. The results showed that growing ICT-OI was faintly associated with decreasing infant mortality. Siahanidou et al (2017) undertook a study to determine the Discrepancies of child and neonatal mortality trends in Greece. They concluded that rural residence and HDI were pointedly associated with IMR. Shukla and Pandey (2019) did a study on the availability and uses of digital technology in community service with reference to health sector in Oromia regional state, Ethiopia. Their main finding of the study showed that uses of technology in the health sector in Ethiopia are in the infancy stages. They found out that the awareness level of technology and its use is low amongst the citizens. Contreras, D, Voets A, Junghardt J. , Bhamidipati S and Contreras S (2020) undertook a study on the drivers of child death through the 2012–2016 drought in La Guajira, Colombia.

They concluded that, if populations had improved revenues or resources and acceptable infrastructure, they would have confronted the drought minus the detected increase in child death. Local studies have been done by several scholars; Gatakaa et al (2011) sought to find out if hospital admission could be considered as an severe happening with an influence on short-term mortality. The results showed that in the single-discharge examination they found 2057 community deaths and 343 post-discharge deaths. Macharia et al (2014) conducted a study on Sub national disparity and inequalities in under-five mortality in Kenya. They found out that Kenya has made enormous advancement in child existence since independence and that the use of the current resources through directed allocation is needed to realize further reductions.

Kiome(1991) undertook a study on Child mortality levels and differentials in Nyeri districts by divisions using centuary 's method of mortality estimation. He found out that mothers belonging to varying status had different child experiences. Oiro (2013) did a study on Interactive Mobile Voice and Text Response Prototype in Reducing Maternal & Child Mortality. The results indicated a positive reception to the system and being effective in information sharing and knowledge improvement among mothers in the reproductive age group. Kiongo (2014) undertook a study on the guidelines for adoption of mobile health among developing countries- a case study Kenya. The results indicated a willingness to learn and use Mhealth tools as they found it easy to learn.

Wasonga (2015) undertook a study on Information and communication Technologies and performance of electronic health projects in Kenya. The study determined that use of electronic health records, health information systems, telemedicine, the internet and mobile health influences performance of healthcare projects.

Some studies have been carried out with reference to Kilifi County. Bwire (1990) undertook a study on baby and child mortality levels and differentials in Kilifi district. The results indicated that there was need for more effort in attending to mothers and infants within the county as well as continuous follow up if child mortality was to be reduced. It is important to point out that most of these studies looked at determination of child mortality or infant and child mortality differentials but none seems to capture how strategic management planning can utilize digital technology as a tool to reduce child mortality within Kilifi county.

Previous studies done touched on areas of determination of child mortality, child mortality levels and differentials as well as drivers of child mortality . Mounts, Miner and Mbarika (2011) opined that more studies were needed to assess the dispersion of technology; and to outline essential health data and communication for better child results. Baig, GholamHosseini and Connolly M (2014) noted problems in terms of safety and confidentiality of medical data, reliability, cost and acceptability that needed to be addressed.

Shukla and Pandey (2019) indicated the gap between the availability of technology and uses in the health sector. Bwire (1990) indicated that there was need for more effort in attending to mothers and infants within the county as well as continuous follow up if child mortality was to be reduced. It is thus clear from the above mentioned studies that whilst research has been carried out on various aspects of child mortality, none looked at establishing a relationship between digital technology strategy and child mortality. This study looked to bridge the gap between child mortality and utilization of digital technology strategy to help reduce this trend in healthcare facilities in Kilifi county.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the study design and methodology used in the study. A research design involves techniques and procedures to be used in performing a study. It is made up of several stages to be followed to complete the research study. Thus, the chapter comprises of these subsections: research design, targeted population, sampled population, data gathering and analysis techniques.

3.2 Research Design

The reserch design that was adopted here was a case study. A case study refers to a process or record of some research conducted into the development of a particular group, person or situation over a time period. It aids in giving a holistic kind of account of the research. Fisher (2010) avers that Case studies do emphasize so much on a complete context analysis of few events and how they are related. This research design accommodated collection of qualitative information and allowed for a deeper understanding of behavioral patterns or aspects of the units that were under study.

The purpose of a research design is to guarantee that the data attained allows one to comprehensively deal with the research problem as clearly as is practicable. Kitay & Callus (1998) state that case studies would be able to provide apt information that would be used for examining processes through which events come about thereby allowing for an exploration of critical and key relationships giving an all round understanding of the phenomenon at hand.

The case study was used due to its ability to bring out the effectiveness of the perception of the officers in charge of the maternity facilities on the effect of digital technology strategy on child mortality within the heath facilities in Kilifi county. The target respondents in this study were the facility mediccal officer of health or the nursing officer in charge of the maternity facility. These were the key personnel who were directly in charge of operations within the health facilities.

3.3 Data Collection

This research study utilized primary and secondary data. Primary data was gathered using interview guide. This data sought to give information on knowledge, use and efficacy of digital technology strategy in improving medical related outcomes for infants within medical facilities in Kilifi county. This would help collect data related to digital technology strategy and tools thereof as well as trends. Secondary data was gleaned from reports, publications and other medical related documents archived or found within libraries relating to the child mortality. This information would help inform on how health facilities have in the past dealt with technology where interaction with it was present and the impact thereof of any use of digital technology in improving health related outcomes on child mortality. These would be at best precise and quantitative (Yin, 2003). This data sought to give information on rates of decline or increase in cases of child mortality over a period of time and likely causes of the changes. The interview guide had 3 sections.

Section A deals with background information while section B will contain technical information questions. Section C will comprise of strategic management planning related questions. The interview questions will have a mix of questions which are either open-ended or closed.

To efficiently utilize time and money resources and make examination easy, open ended questions were used as they were intended to encourage the respondents to share more information minus restriction on the study subject. The researcher administered the interview guide to the Medical Officer in charge of the health facility visited or the Nursing Officer in charge. These are the people who are well versed with maternal health issues in the various facilities.

3.5 Data Analysis

Yin, (1994) refers to data analysis as entailing; examining, categorizing and organizing the responses to deal with the research problem question. The duly filled interview guide forms were collected and secured well to ensure data privacy is maintained. Sorting of data was then done to categorize the core questions that formed the crux of the study and that would then be used in forming the pattern that would build the narrative and discourse relating to the study.

The data and information collectted was cleaned to clear errors that may have occurred during the data entry process. Content analysis was used at it has the ability to help examine trends and patterns thereby providing an empirical basis for monitoring shifts in the interviewees 'opinions'. Outcomes of the review were presented in paragraph form.

CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

The objective of the study was to determine the effect of digital technology strategy on child mortality in public health facilities in Kilifi County. Of the 143 public health facilities, 26 were sampled while 17 (65.3%) responded to the survey questionnaire with a corresponding non-response rate of 34.7%. This was taken as a good sample rate to meet the objectives of the study. Data was collected, analysed interpreted and documented as per objectives. Findings have been put forth in three parts: these being general information, information pertaining to effects of digital technology strategy and lastly the relationship between digital technology strategy and child mortality.

Table 4.1: Response Rate

Number of Questionnaires administered	Number of Questionnaires filled and returned	Response Rate
26	17	65.3%

Source: Research Data, 2022

4.2 General Information

The study looked to determine general information on respondents such as number of years of service for the heads of the maternity units, age of mothers visiting the maternity unit, number of deliveries done at a health facility, infants reaching 5 years among others. This data is analyzed in this section.

4.2.1 Years of Service

The respondents were requested to indicate the years of experience within the Health department. Various ranges were obtained. This data was scrutinized via frequencies and percentages and is represented as per Figure 4.1

Figure 1: Years of Experience

Source: Research Data, 2022

Figure 4.1 is indicative that no respondents have worked for less than 2 years within the health facility, 12% have worked for between 2 to 4 years, 35% for between 4 to 6 years while 53% have worked for 6years and more. This thus implies that most of the respondents have been in continuous service for more than 2 years meaning there is a presence of knowledge and practical knowhow in matters of public health.

4.2.2 Knowledge of the presence of Digital Health Apps and their Use

The respondents were obliged to indicate their knowledge of presence of digital technology health apps disseminated via mobile apps as well as how to use them.

From the responses it is instructive to note that more than half of the respondents were aware of mobile health related apps available on smart and generic phones in the country (11). Just about half of the respondents were vaguely aware of how these mobile related apps are used (12). Overall this implies that awareness and know how in utilization of digital technology via mobile health apps is present but practical use is wanting and a lot needs to be done to educate both healthcare workers and the population on presence and practical use of the tools available.

4.2.3 Child Mortality

The respondents were then required to give information on various questions related to the clinical visits and child mortality related queries. From the responses received it is noteworthy to indicate that more women are now having their children later (>25yrs) and the number of births per woman in five years is apparently low with most having two or less children in five years(14). Most of the respondents alluded to the fact that they are now seeing more children getting past five years and surviving(14). This was captured in one of the responses as below.

> "We are having more awareness on spacing of births by women noting that now we are seeing more women getting their first child later towards their twenties as well as other children coming later. This is different from earlier times when early marriages or early pregnancies occurred.

> Though still rife within the communities the aspect of early pregnancies seems to have been reduced maybe due to more information to parents as well as Government intervention via policies and penalties meted out to those infringing on the rights of the girl child."

Overall there seems to be an improvement in survival of infants. Spacing of children in families pointing to more knowledge being available to many women on family planning methods. Education relating to maternal health seems to be permeating within the communities leading to better decision making as regards family health and growth.

4.3 Digital Technology Strategy

The study investigated digital technology as a strategy in use within the public health facilities in Kilifi county. Assessed were the possibility of digital technology in assisting to enhance service delivery, strategy planning using digital technology in improving child mortality within the county and country, digital technology as a means of implementing the healthcare strategy in achieving vision 2030 goal on healthcare as well as use of strategic management in achieving the SDG goal on health access to all within Kilifi county.

4.3.1 Effects of Digital Technology Strategy

Respondents were required to give information on the aspect of digital technology strategy and its use being able to meet certain outcomes within the public facilities of health.

A majority of the respondents affirmed that digital technology can be used to enhance service delivery to expectant mothers (14), that it is capable of improving child mortality (16), that it can assist in achieving vision 2030 (14) as well as being able to have the capacity to achieve the SDG on health access (16). There was a general consensus as to the impact that proper and knowledgeable use of digital technology can have positive and far reaching effects within the health care system as captured from one respondent below:

> " It is very possible that digital technology if properly inculcated in to our daily work routine has the capability to enhance our efficiency in handling our cases and for more robust and impactful follow up to ensure that we are able to have children make it past the age of five years. Improved efficiency in handling cases means we can achieve and surpass our set targets and goals thereby aiding us in being able to reach and achieve the global SDG targets as well as the countries vision 2030 goal on healthcare provision especially with regards to maternal health care. Management and the Government should invest in the use of digital technology to spur the health sector to have better and more improved outcomes for the betterment of our communities"

When asked about possible challenges that prevent health facilities from implementing digital technology in whatever form to aid in service delivery, there were plenty of similarities that came up. Central to this was the critical aspect of ensuring that management is involved in practical use of digital technology on a routine basis to ensure that the workforce follow through. Enforcement of use of various tools in service delivery was noted to be a challenge if top level management do not speak on the issue as well as being involved in daily use of the tools.

Further to this it was established that proper use of technology can only take place if there is sufficient knowledge among health workers as well as clients of the facility on how the tool works. It was proposed that sufficient trainings via workshops, seminars as well as practical demonstrations be inculcated to ensure knowledge is gained on the tools being used. Resourcing of facilities with the appropriate tools as well as ensuring that financial backup is provisioned came up as another strong point as regards challenges that would prevent successful implementation of technology in dealing with child mortality.

On the question of recommending add ons that would assist to enhance mobile health tools, make them more accessible and easy to use, there were a raft opinions that were shared. Most common was the aspect of ensuring that there is sufficient education to the health workers as well as the community on these tools. One respondent captured this thus:

> " It is important that the entire population be well educated on the available tools, how they are to be used be it via the smart phone or generic phone. Further to this it is vital that health workers are properly trained so that they as well can be trainers to the clients who visit the health facilities. Education and frequent and proper use of the tools will enable better learning, faster correction and improved outcomes from the process of use of digital technology in improving health services."

It was thus clear that there is a visible interest in technology use in improving processes. The health workers were very vocal on the need for a policy shift that would bring on board in a very strong way the use of already existing technology via the mobile phone as a daily work tool to add onto existing processes and methods of service delivery.

4.5 Discussion of Results

The objective of the study was to determine the effect of digital technology strategy on child mortality in public health facilities in Kilifi County. The study established that there is a strong positive view on the capability of Digital Technology in Enhancing service delivery to expectant mothers. Most of the respondents showed an awareness to the presence of digital technology tools via apps that are related to healthcare provision. Most were also aware of the general functionality of such apps. It was further established that one of the key challenges towards ensuring high success of the tool was that many people within the population were not knowledgeable in the use and advantage obtained by use of such digital technology.

There was a rallying call towards creation of awareness through practical demonstrations, discussions, trainings and follow ups within the maternal health sector to ensure adoption and more frequent use of the tools to provide the environment that would lead to success in use of such tools thereby successful outcomes in health related strategy implementation. This was emphasized as an important learning opportunity for both health workers and client/patient populations. This was in line with Wasonga (2015) who determined that use of electronic telemedicine, health records, health information systems, mobile health and the internet influenced performance of healthcare projects.

The study established that Strategy planning via digital technology can improve child mortality within the county. There was an overwhelming positive response that yes with technology and its effective and frequent use there would be great strides made in increasing the infant survival rate in the county.

Many respondents were of the view that management needs to inculcate the used of technology and ensure its continuous implementation daily to hep drive positive outcomes. The administration was found to have a big role to play in the use of technology as a tool in daily operations. This referenced well aspects of the contingency theory especially on the viewpoint originated with the work of (Woodward, 1958) who noted that technologies directly regulate variations in such administrative qualities as the width of authority, control being centralized, and validation of rules and procedures. Administrations can determine to a great extent how different tools can be received in an environment by providing proper educational and systematic delivery mechanisms to aid in quick understanding of a strategy. They also need to continuously appraise themselves via workshops and seminars and other means to capture feedback on the tools in use, challenges faced and from this formulate means of ensuring that there is a continuous use of the tools with improvements made in ease of use. This then becomes ingrained in the work culture.

The study established that the respondents were in agreement that digital technology is capable in effectively implementing Healthcare strategy and can assist in achieving vision 2030 goal on healthcare access in Kilifi county. The interest in the presence and use of the technology was spoken about as indicated by one respondent who said “I know the technology is there and it can be very useful. What we need is training on its use, policy implementation and making it part of the tools we use daily to collect information and having meetings with the population to showcase and educate on the tools and their usage.” This would enhance its usage by many more healthcare workers as well as our patients.”

This was in line with Oiro (2013) who found that there was a positive reception to the system and being effective in information sharing and knowledge improvement among mothers in the reproductive age group. The sentiments also concurred with Kiongo (2014) who indicated that there was a willingness to learn and use Mhealth tools as end users found it easy to learn.

The study determined that there was indeed a capability of strategic management in achieving SDG on health access to all in Kilifi county. The respondents had an overwhelming positive response that if digital technology was well used then the SDG health targets are reachable and attainable. This was captured by one respondent who noted; “Every member of staff has a mobile phone if not a smart phone of some sort. Most of our patients and clients have phones. We need to utilize the features of these devices more and the functionalities to be able to deliver better value to our patients and be able to gain useful insights through this mode of communication.” The county government as well as central government needs to make this part of the culture in the healthcare departments and ensure that technology is frequently and correctly used to drive positive outcomes” This was in line with Areba(2016) who recommended that the government should highly invest in modern telephony among other equipment to aid in faster diagnosis and follow ups.

CHAPTER FIVE: SUMMARY AND CONCLUSION

5.1 Introduction

The chapter gives a summary of findings from the presentation and discussions of the previous chapter. It goes on to highlight the findings of the study, conclusion drawn from it and recommendations.

The study looked to determine the effect of digital technology strategy on child mortality in public health facilities in Kilifi County.

5.2 Summary

The study targeted a total of 26 public health facilities out of which 17 responded with a response rate of 65.3%. The aim of the research was to determine the likely effect of digital technology on child mortality within public health facilities in Kilifi County, Kenya. Findings on Digital Technology in Enhancing service delivery to expectant mothers showed that there was a good awareness by healthcare workers as to the presence of digital technology tools geared towards healthcare delivery in particular apps available on the mobile platform. More than half of the respondents could clearly recognize two or more digital technology apps. On their use the findings established that there was a gap between knowing the tool and using the tool. This pointed to a lack of consistent and purposed interaction with tools present in the market that could assist greatly in improving healthcare outcomes especially in the maternal health sector. The findings of the study established that strategy planning via digital technology can greatly improve child mortality within the county.

There was a general consensus among the chief healthcare workers interviewed that technology can play a key role in turning around maternal health related outcomes within the county. There was agreement that management needed to play a bigger role in rolling out the use of technology and ensuring that daily operations inculcate this technology. This also pointed to the issue of the top management being a part of training on the use of the digital technology related tools, their advantages and how they can be used to bring about positive change in the healthcare environment. A change of culture towards incorporating tools that bring about positive change and outcomes came out strongly and pointed to a need for policy changes and updating and implementation plans in the sector.

From the findings it was evident that with digital technology strategy in play, it is possible to effectively implement the healthcare strategy and assist greatly towards achieving the vision 2030 goal on healthcare access in Kilifi county. It was clear that there is a gap in knowledge of presence of digital technology tools, how they are used and how they can be used to aid in bringing about positive outcomes. One of the most repeated responses was a clear need for training on use of such tools to both the healthcare workers and also patients who visit this facility. This pointed to the need for continuous educational programmes that could run right at the facilities on various days every week in the form of workshops or barazas with trainers teaching and demonstrating the use of such tools. Continuous evaluation on reception of the tool and level of understanding of the tools would aid in determining penetration of knowledge within the workforce and resident population within the co systems in the county. What came out clearly from the healthcare respondents was excitement on the possible positive outcomes that could be achieved if the technology was well harnessed and used.

The study findings also determined that there was a capability of strategic management being used to achieve SDG on health access to all in Kilifi county. There was agreement that with the proper use of technology SDG related health targets can be achieved and surpassed. Clearly what seems to be lacking is information, knowledge on the tools, their effective use and the plethora of positive outcomes that can be yielded from exploitation of the tools available.

With the responses obtained on this key aspect, it was clear that there needs to be a review on policy on how strategic management can come in more strongly in the healthcare sector especially on the use of digital technology and how this technology can be properly implemented or tweaked to bring about better outcomes for the healthcare sector. The respondents talked of a need for the county government and central governments to continuously review and update local policies in line with current trends in the world on incorporating new technologies with positive bearing outcomes.

5.3 Conclusion

From the findings, this study concluded that there is a general knowledge on presence of digital technology related tools in the market. There is clearly a gap between knowledge of presence of these tools and their basic use in obtaining healthcare outcomes. The study concluded that digital technology if properly harnessed can bring about positive change in the county and to a large extent the country in driving better outcomes on child mortality. The speed of information dissemination and its ability to put together various inputs can be used to improve the way in which data is gathered and analysed for better output.

Secondly the study concluded that there is a gap in the knowledge base of health care workers about digital technology and tools used within the health sector. In as much as most healthcare workers are aware about these tools, they at the same time fall short in explaining how they are used. This points to a gap in usage of such tools, functionalities and best practice when using them. There is thus a need for a systematic program to be put in place as part of operations to educate health care staff continuously on digital technology related tools used in the health sector and keep using feedback obtained to improve on proper usage and data collection methods. There is a clear need for management to make these tools part of daily operations and train healthcare workers on their presence and use them frequently to enhance and augment other tools used in daily healthcare operations.

Thirdly, the study concluded that there is a need for policy shift, change and reformulation in the inculcation of new technologies within the framework of healthcare provision especially in the use of digital technology related tools in provision of maternal healthcare. This would need change of strategy to incorporate use of digital technology in maternal healthcare. With this as part of policy, then it would be incumbent on the health sector management to actualize use of this technology and provide a conducive environment for this technology to be well received, taught, disseminated and re-evaluated continuously as part of daily operations to ensure that within the shortest time it is a tool used daily and is able to give maximum benefit to the healthcare system more so to the maternal health sector.

5.4 Recommendations

The findings of this study underline that the effect of digital technology strategy on child mortality are positively correlated and influence the achievement of strategic goals. It is important to note that public health facilities can make great strides by incorporating the use of digital technology to drive their agenda of substantial reduction of child mortality. It is thus recommended for the ministry of health and the county Government of Kilifi to guarantee that there is adequate resource mobilization and training on digital technology within all the public facilities of health in order to facilitate a step growth in implementation of digital technology strategy. Resources should then be made available in good time to ensure proper training of personnel and deployment of tools is done so that all facilities enjoy the positive change and growth accompanied by use of digital technology strategy.

The study goes further to recommend that officers in charge of managing public health facilities be properly trained for successful implementation of the strategy. This is important as knowledge of use of resources and tools is vital for teaching other junior staff and ensuring successful trickle down of the strategy to the grassroots. Further, continuous monitoring and evaluation of proper use of the tool as well as verifying outcomes from different facilities would enable management to see which areas need to be refreshed, where further training would be needed as well as how else the tool could be optimized to give much better results on the situation on the ground.

5.5 Limitation of the Study

This study purposed to make a significant contribution to the body of knowledge on strategic management within the health sector. However, some areas would still need to be explored and extended. Use of one respondent per public health facility was a limitation to this study as it is possible that having a second respondent would have given a more robust picture and outcomes towards digital technology strategy use. Secondly the questionnaire could be enriched further to ensure specificity on some questions which looked ambiguous and gave some respondents a problem when answering.

More information on the healthcare workers would be a boon on understanding their wealth of experience for example within a span of several years how many stations have they worked in and what gaps did they note in child mortality related issues. This study nevertheless is a positive step towards bringing greater insight in implementation of digital technology strategy within the health sector.

5.6 Suggestions For Further Research

The study was conducted within public facilities of health in Kilifi County. Findings herein can be further corroborated by conducting similar studies within public health facilities in other counties within the republic of Kenya. This would help in determining if other counties have similar or different results. A diverse view point can be gleaned from conducting similar studies within the private health facilities in the counties and country at large.

This would also be able to give a 360 degree view on the level of penetration of technology and its use in bringing about positive health outcomes within the health sector in the country as a whole. The study findings are based on the administrator's point of view. The study scope can also be stretched to cover other strategic areas of public health facilities.

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APPENDICES

Appendix I: Letter of Introduction

UNIVERSITY OF NAIROBI
FACULTY OF BUSINESS AND MANAGEMENT SCIENCES
MOMBASA CAMPUS

Telephone: 4184160/1-5 Ext. 220
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P.O. Box 30197
Nairobi, Kenya

26th November, 2021

TO WHOM IT MAY CONCERN

RE: INTRODUCTION LETTER

This is to certify that **MOSES HANJARI KUBO (REG. NO. D61/86183/2016)** is a bona fide student of the University of Nairobi, pursuing a degree in Masters of Business Administration (MBA). As part of the fulfillment of the requirement of the course, he is undertaking a study titled "***EFFECT OF DIGITAL TECHNOLOGY AS A STRATEGY ON CHILD MORTALITY IN PUBLIC HEALTH FACILITIES IN KILIFI COUNTY, KENYA.***"

You have been selected as one of the respondents in the study. The purpose of this letter therefore, is to kindly request you to assist and facilitate in carrying out the study in your organization by answering the questions in the attached questionnaire.

Data and information obtained through this exercise is purely for academic purpose and will be treated with utmost confidentiality. In case of any questions or clarifications, he can be reached on 0722247808 or hanjarim@gmail.com

Your assistance and cooperation will be highly appreciated. Thank you very much in advance.

Yours Faithfully,

UNIVERSITY OF NAIROBI
CO-ORDINATOR
26 NOV 2021
SCHOOL OF BUSINESS
MOMBASA CAMPUS

Dr. Stephen Odock,
Coordinator, Faculty of Business and Management Sciences, Mombasa Campus

Appendix II: Interview Guide
Section A: Background Information

1. What is your designation in the facility?

   ……..
2. How long have you worked in this facility?

   ……
3. What is your qualification in the health field?

   ……

Section B: Digital Technology Strategy

1. What type of phone does your institution use for communication with patients?

   ……..

2. Have you heard of any Mhealth [mobile health] apps?

   ……
3. Do you know where to find any mobile related health tools on your handset?

   ……

4. Do you know how to use any of the mobile related health tools?

   ……
5. Where did you hear of these mobile related tools?

   …….

6. How often do you use the mobile health related tools?

   ……

7. To what degree do you feel that digital technology can assist in enhancing service delivery to expectant mothers

   ……

8. Can strategy planning via digital technology use improve child mortality within the county and country as a whole?

   ……

9. In your opinion do you think digital technology will aid in implementing the healthcare strategy and assist in achieving the vision 2030 goal on health care access within Kilifi County?

   …….

10. To what degree would strategic management assist in achieving the SDG goal on health access to all within Kilifi County?

    ……..

11. What in your view prevents the facility from implementing digital technology strategy as a tool in service provision to aid in tracking of maternal health cases?

    ……..

Section C: Child Mortality

1. What is the average age of expectant mothers visiting your facility?

   ……..

2. What is the average number of births per woman in the last five years in the area?

   ……..

3. What is the average number of mothers visiting who deliver all their children in a health facility?

   ……

4. What problems have you faced in the delivery process?

   .....

   .....

   .....

5. What is the average number of mothers who are able to follow through all clinic appointments for vaccinations and weighing until the child is 5 years?

   …….

6. What is the average number of mothers whose children get to 5years and above and survive?

   ……..

7. What would you recommend as an important add on to enhance healthcare in mobile health tools and apps to make them more accessible, acceptable and easy to use?

   ……..

Thank you for participating.

Appendix III: Sample Frame for Data collection

Hospitals in Kilifi County

1. Kilifi District Hospital
2. Malindi District Hospital
3. Mariakani Sub County Hospital

Health Centres in Kilifi County

1. Mtwapa Health Centre
2. Matsangoni Health Centre
3. Gede Health Centre
4. Msabaha Health Centre
5. Chasimba Health Centre
6. Kizingo Health Centre
7. Mariakani Community Healthcare Services
8. Vitengeni Health Centre
9. Cowdray Health Centre
10. Watamu Community Health Centre

Dispensaries in Kilifi County

1. Mtondia Dispensary
2. Jilore Dispensary
3. Bwagamoyo Dispensary
4. Mazeras Dispensary
5. Kokotoni Dispensary
6. Mtwapa Dispensary
7. Mnarani Dispensary
8. Mtondia Dispensary
9. Mavumbini Dispensary
10. Tsangatsini Dispensary
11. Roka-maweni Dispensary
12. Chumani Dispensary
13. Jimba Dispensary
14. Timboni community Dispensary
15. Vishakani Dispensary
16. Chigato-mazeras Dispensary
17. Junju Dispensary
18. Kinarani Dispensary
19. Mavueni Dispensary
20. Msumarini Dispensary

Source: Kilifi county website (2022): https://kilifi.go.ke/ova_dep/health-services/

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