

MOBILE DATA MANAGEMENT AND PROJECT SUCCESS:

A CASE OF MINISTRY OF HEALTH, KAMPALA.

BY

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18/MMSME/KLA/MAY/092

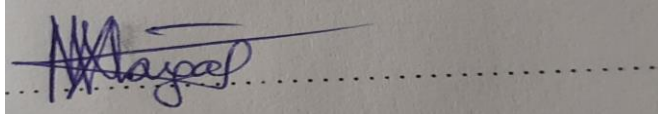
**A DISSERTATION SUBMITTED TO THE SCHOOL OF BUSINESS AND
MANAGEMENT IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE
AWARD OF A MASTER'S DEGREE IN MANAGEMENT STUDIES
(MONITORING AND EVALUATION) OF
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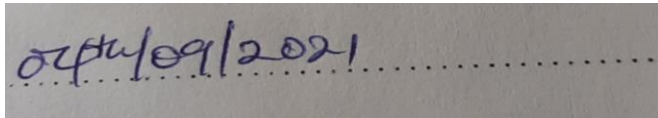
DECLARATION

I, Joseph Mbuga, avow that this work is originally mine and has not been submitted to any institution or published before for any awards. I am the sole author of this work.

Signature

A handwritten signature in blue ink, appearing to read 'Mbuga', written on a grey background with a horizontal dashed line below it.

Date

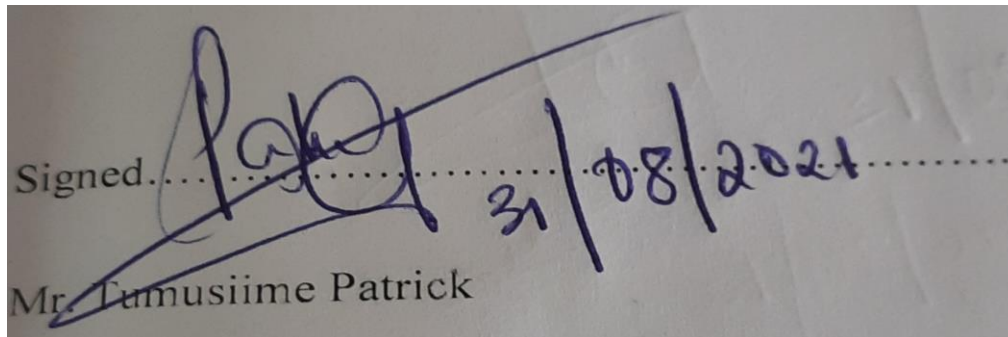
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APPROVAL

This is to certify that this research was conducted under our supervision and submitted for examination with our endorsement as partial fulfillment for the award of a Master's degree in Management Studies (Monitoring and Evaluation) of Uganda Management Institute.

Signed *innogaba* 31/08/2021.....

Dr. Innocent Nuwagaba



Signed..... *Patrick* 31/08/2021.....
Mr. Tumusiime Patrick

DEDICATION

I commit this work to God and my entire family, my wife whose love, inspiration, backing and courage while I was undertaking this research study have been immeasurable and a driving force towards this achievement. To our lovely children, Jeremiah and Jordan, thanks for enduring my reduced attention. With great exploration of the allies and enemies of family life, this brings inspiration to your budding careers as we have achieved this together.

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TABLE OF CONTENTS

DECLARATION.....	i
APPROVAL	ii
DEDICATION.....	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF ACRONYMS	xi
ABSTRACT.....	xii
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 Introduction	1
1.2 Background to the study.....	1
1.2.1 Historical Background	1
1.2.2 Theoretical background	3
1.2.2.1 Relevance of the theory to the study.....	3
1.2.3 Conceptual Background.....	3
1.2.4 Contextual Background	5
1.3 Problem Statement.....	6
1.4 The purpose of the study.	6
1.5 Study Objectives.....	6
1.6 Specific Research Questions.	6
1.7 Study Hypothesis.....	7
1.8 Conceptual Framework.....	7
1.9 Significance of the study	8
1.10 Justification of the study.....	9
1.11 Scope of the study.....	9
CHAPTER TWO.	10
LITERATURE REVIEW.....	10

2.1 Introduction	10
2.2 Theoretical Review	10
2.3 Review of Related Literature	11
2.3.1 Mobile Data Collection and Project Success	11
2.3.2 Mobile Data Analysis and Project Success.....	13
2.3.3 Mobile Data Reporting and Project Success.....	14
2.4 Summary of the Literature Review	15
CHAPTER THREE	16
METHODOLOGY	16
3.1 Introduction	16
3.2 Research Design.	16
3.3 The study population	16
3.4 Sample Size.	17
3.5 Sampling techniques and procedures	18
3.5.1 Purposive sampling.....	18
3.5.2 Simple random sampling	18
3.6 Data Collection Methods.....	19
3.6.1 Interview Method.....	19
3.6.2 Questionnaire Survey Method	19
3.6.3 Document Review Method.	20
3.7 Data Collection Instruments	20
3.7.1 Interview guide	20
3.7.2 Questionnaire	20
3.7.3 Document review checklist.....	21
3.8 Validity and Reliability	21
3.8.1 Validity	21
3.8.2 Reliability.....	22
3.9 Procedure of Data Collection.	23
3.10 Data Analysis.....	23

3.10.1 Quantitative Data Analysis.	23
3.10.2 Qualitative Data Analysis.	23
3.11 Ethical Consideration	23
CHAPTER FOUR.....	24
PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS.....	24
4.0 Introduction	24
4.1 Response Rates	24
4.2 Demographic characteristics of the study sample	25
4.2.1 Distribution of respondents by gender	25
4.2.2 Distribution of respondents by Age category	26
4.2.3 Distribution of respondents' by profession.	26
4.3 Empirical Findings	27
4.3.1 Respondents score on overall Mobile Data Management and Project success	28
4.3.2 Respondents on Mobile Data Collection and Project success	29
4.3.2.1 Descriptive results for mobile data collection and project success	30
4.3.2.2 Correlation results for mobile data collection and project success	32
4.3.3 Respondents scores on mobile data analysis and Project success	33
4.3.3.1 Descriptive results for mobile data analysis and project success.....	33
4.3.3.2 Correlation results for mobile data analysis and project success	35
4.3.4 Respondents score on mobile data reporting and Project success	36
4.3.4.1 Descriptive results for mobile data reporting and project success	36
4.3.4.2 Correlation results for mobile data reporting and project success	39
CHAPTER FIVE	41
SUMMARY, DISCUSSION, CONCLUSION AND RECOMMENDATIONS	41
5.0 Introduction	41
5.1 Summary of results	41
5.1.1 Mobile data collection and project success.....	41
5.1.2 Mobile data analysis and project success.....	42
5.1.3 Mobile data reporting and project success.....	42

5.2 Discussion of results	42
5.2.1 Mobile data collection and project success.....	42
5.2.2 Mobile data analysis and project success.....	44
5.2.3 Mobile data reporting and project success.....	45
5.3 Conclusions	46
5.3.1 Mobile data collection and project success.....	46
5.3.2 Mobile data analysis and project success.....	47
5.3.3 Mobile data reporting and project success.....	47
5.4 Recommendations	48
5.4.1 Mobile data collection and project success.....	48
5.4.2 Mobile data analysis and project success.....	48
5.4.3 Mobile data reporting and project success.....	49
5.5 Limitations of the study.....	49
5.6 Areas for further research	50
4.0 References	51
APPENDICES	56
Appendix i: Introduction	56
Appendix ii. A Consent Form	56
Appendix iii: Interview Guide.....	57
Appendix iv: Questionnaire	58
Appendix v: Document Review checklist.....	62
Appendix vi: Table for determining sample size	63
Appendix vii: Introductory letter from Uganda Management Institute	64
Appendix viii: Research application letter to Ministry of Health	65
Appendix ix: A clearance letter from Ministry of Health	66

LIST OF TABLES

Table 3.1: Sample Size Determination	17
Table 3.2 Content validity indices for the questionnaire	22
Table 3.3 Reliability Indices Analysis Table	22
Table 4.1: The table shows distribution of Respondent Category and response rates.....	24
Table 4.2: Sample Population study aggregated by gender	25
Table 4.3: Age category of respondents	26
Table 4.4: Descriptive statistics for Mobile Data Management and Project Success.....	28
Table 4.5: Descriptive statistics for mobile data collection and project success	30
Table 4.6: Correlation matrix for mobile data collection and project success.....	32
Table 4.7: Descriptive statistics for mobile data analysis and project success	33
Table 4.8: Correlation matrix for mobile data analysis and project success	35
Table 4.9: Descriptive statistics of mobile data reporting and project success	36
Table 4.10: Correlation matrix for mobile data reporting and project success.....	39

LIST OF FIGURES

Figure 1.1: Conceptual Framework.	8
Figure 4.2: Distribution of respondents by profession.....	27

LIST OF ACRONYMS

ACTs:	Artemisinin based Combination Therapies
CSO:	Civil Society Organisations
DHI:	Division of Health Information
DHIS2:	District Health Information System Version 2
DV:	Dependent Variable
GPS:	Global Positioning System
HMIS:	Health Management Information System
ICT:	Information Communication Technology
ID:	Independent Variable
MDC:	Mobile Data Collection
MDG:	Millennium Development Goals
MDM:	Mobile Data Management
MOH:	Ministry of Health
mTrac:	Mobile Tracking
ODK:	Open Data Kit
SDG:	Sustainable Development Goals
SPSS:	Statistical Package for Social Sciences
U.S:	United States
UN:	United Nations
UNICEF:	United Nations International Children Emergency Fund
USAID:	United States Agency for International Development
VHT:	Village Health Team
WHO:	World Health Organisation

ABSTRACT

The study investigated the relationship between Mobile Data Management and Project success. It was guided by the three objectives; (1) To find out the relationship between mobile data collection and project success. (2) To examine the relationship between mobile data analysis and project success. (3) To analyse the relationship between reporting findings and project success. The researcher used a cross sectional survey design under quantitative and qualitative research approaches. Using a self-administered questionnaire, quantitative data was collected from 64 respondents and interviews were conducted with 4 respondents using an interview guide for qualitative data. Secondary data was gathered using document review from journals, performance reports, textbooks and the world wide web. Qualitative data was analysed using thematic analysis while quantitative data was analysed using descriptive statistics, correlation and regression analysis with the help of SPSS. Results showed that there was a weak positive relationship between mobile data collection and project success, a moderate positive relationship between mobile data analysis and project success and a moderate positive relationship between mobile data reporting and project success. Interestingly, mobile data management has a statistically significant relationship with project success as all the p values were less than 0.50. Centered on these findings, it was concluded that Mobile data management has a significant positive relationship with project success. The study recommended that mobile data collection should be incorporated in day to day data collection processes of projects/programs. Secondly, it recommended that mobile data analysis should be enhanced with analytics and integration of external analysis software applications. The study further recommended that there is need for mobile data reporting for wider coverage to the target audience. Finally, the study recommended that for organisations to adopt sophisticated technology there is need to train staff to enhance their skills, motivate them and register project/program success at a reduced cost with maximum quality in a short period.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This study examined the role of Mobile Data Management and project success. This chapter examined the brief introduction to the study and background while highlighting the historical, theoretical, conceptual and contextual backgrounds. It examined the problem statement, purpose, objectives, research question, study hypothesis, justification, significance and scope of the study.

1.2 Background to the study.

Mobile Data Management has evolved over time with the trend of computing technology. It has been transforming to cater for the ever-changing needs of human activities and development globally and locally (UN Global Pulse, 2012:10). Project success is the ultimate realization of the Project's intended goal. To realise this goal there are three dimensions that are considered. These are time, cost, scope and quality (Chinyamurindi, 2017). Mobile Data Management is a great aspect to project success if it aids projects to achieve timeliness, cost reduction and accelerates quality services or products and within scope (Chinyamurindi, 2017).

This segment covered the historical, theoretical, conceptual and contextual background.

1.2.1 Historical Background

Mobile data management has evolved over time and is considered a good catalyst for digitization and performance improvement in Project data management. This is ubiquitous environment of physical mobility. The mobile device accesses data and information from any device ubiquitously (Talukder, Ahmed, Yavagal, & Hill, 2010). Since the year 2000, the monitoring of the MDGs sparked off innovation in the way progress was to be captured and measured globally. This called for improved monitoring and evaluation systems to increase accountability and realise focused programs. However, most countries were lagging behind towards achieving the MDGs (United Nations [UN], 2014 P.4).

Unclear and doubted validity and reliability of evaluation reports with engineered figures and cooked data were the order of the day (Belcher, 2014). Digital upscaling offered a solution and is very fast to implement as there is always curiosity to understand how realistic and fast it can make man simplify his work. In Africa, digital implementation was received with combined effort as it was implemented with the ultimate goal of social sector improvement and poverty reduction. This technological advancement was believed to have potential of contributing immensely to the MDGs.

In Africa, It took 5 years to set up as many mobile lines in Africa as it took 100 years to set up fixed lines (Weigel, G and Waldburger, D, 2004).

The UN Global Pulse Lab Kampala was set up to assist the Ministry of Health through the advanced mobile digital analytics technologies to help present dynamic information about the outbreak of Typhoid while providing a visual impression in an effort to aid spontaneous decision making which improved Typhoid outbreak fight. (UN Global Pulse, 2015). Penetration of MDM is on immense rise across the world. In United States alone across all ethnic and racial groups of all ages, 69% of Americans monitor health related information and 21% of them use mobile digital devices (Fox & Duggan, 2013). This adoption presents great opportunities and ultimate success. These opportunities increase with the use of mobile devices like smart phones, tablets and others as they enhanced the computing power with application, interface capabilities and internet access (Cnossen et al., 2015).

Companies that have embraced this kind of innovation usually employ latest technology which facilitates their work in fast and transparent ways while increasing their efficiency and accountability (Cremer, Zhang, & Schutter, 2017) .

1.2.2 Theoretical background

The research study espoused the Project Management Triangle theory by Martin Barnes of 1980. The theory was invented by Dr. Martin Barnes in 1980. It stresses that Project's quality of work is constrained by the Project's budget and time. It also says that Project managers can decide to alter between the three constraints. The theory suggests that a change in one constraint automatically causes changes in other constraints.

1.2.2.1 Relevance of the theory to the study

Project Management Triangle theory focuses on the quality, time and cost (budget) of a Project work. Mobile Data Management is implemented to boost quality, realise timeliness and reduce the cost (Caccamese & Bragantini, 2012).

Project activities are implemented with the stakeholders in mind for delivering quality to them. Mobile Data Management and Project success are effective when the right resources are employed. These can be technological advancements especially in form of sophisticated mobile data management technology for data collection and analysis to make informed decisions. A Project designed with these constraints in mind focuses on stakeholder management which increases chances of Project success (Eby, 2017).

The theory also empowers Mobile Data Management and Project success through the tasks of the Project managers, their drive, strategic decisions, skills and knowledge (Chinyamurindi, 2017).

1.2.3 Conceptual Background

Data is the lifeblood of every institution in decision-making and supports accountability. Mobile data management is believed to be very effective, efficient and collaborative (UN, 2014).

Mobile Data Management improves data integration, increases data usefulness, adds a high level of transparency and accountability while preventing the invasion of privacy and abuse. It increases access to and use of data and eventually leads to more empowered people, useful

policies, great decisions and inclusive participation leading to project success for the benefit of the people and the planet at large. Data are disembodied information (Wendy, 2011:8).

Mobile Data Management is the independent variable under this study. It comprises of Mobile data collection, Mobile data analysis, and reporting. Mobile Data Collection is focused gathering of structured information using mobile devices such as smartphones, PDAs or tablets (humanitarian-nomad.org). MDC is therefore the use of portable mobile devices running a specialized software application on a supported software platform to support ubiquitous data programming and data gathering activities. Mobile data collection techniques are the tools that are used to gather information using mobile devices like Open Data Kit, Kobo tools, Commcare and others. Mobile Data Collection is indicated by the Compatibility of the data capturing forms. These forms should be compatible with other data capturing tools like Microsoft word. Data collection should be supported by multiple platforms where by a failure of one can call for the use of another supported one. MDC is supported by a skip logic technique during the data collection which supports nested if conditions.

Mobile Data Analysis is the use of mobile devices for real time data processing for extension and real time decision or action. Real time actionable data made available based on the urgent need and action required. Mobile Data analysis should support visualization of the data collection. This is presented as data is being collected and is easy to interpret. Mobile Data Analysis is effective when it supports integration of other Data analysis tools like SPSS and Excel. This reduces the time of analysis and errors.

Mobile Data reporting is the information produced and submitted by users, project beneficiaries or project implementers through mobile applications. Mobile Data reporting is enhanced with the sharing capability to disburse the information to a big intended population. Mobile reporting should also support confidentiality and timeliness (UN Global Pulse, 2012).

Mobile Data Management is therefore the use of portable mobile devices to support the collection, analysis, reporting or use of information. Project success is the ultimate realization of the Project's intended goal. To realise this goal there are three dimensions that are consider. These are time, cost, scope and quality (Chinyamurindi, 2017). Mobile Data Management is a great aspect to the project success if it aids projects to achieve timeliness, cost reduction and accelerates quality services or products (Chinyamurindi, 2017).

1.2.4 Contextual Background

The United Nations has a global campaign of achieving the SDGs. Uganda is one of the countries in the campaign. Government Ministries, Departments and Agencies, civil society organisations and international organisations are all focusing their efforts, funds and objectives towards the SDGs. In order to achieve the SDGs, United Nations suggests technological advancements and most notably the use of mobile data management techniques to aid in data collection, analysis and reporting as it aids project success (UN, 2014).

MDM is being used by Ministry of Health (MOH) – Uganda through different Mobile applications like mTrac, ODK and Kobo Tools. mTrac project in Uganda has been notably successful. Being a government ministry, MOH adopted the use of MDM in project execution, which has significantly aided project and program success. mTrac project success is attributed to Mobile Data Management. However, the relationship between Mobile Data Management and Project success is ambiguous. This triggered the study into these variables to clearly investigate the relationship between Mobile Data collection and Project Success. The study intends examine the relationship between mobile data analysis and project success as well as analyzing the relationship between reporting findings and project success.

1.3 Problem Statement

The Ministry of health implements Mobile Data Management, which operates on Mobile phones, Smart Phones and Tablets. Data is collected and sent using mobile devices to alert decision makers at different levels. By March 2014, 1,200 district health members, 18,700 health facility staffs and 7,400 VHTs were using Mobile Data Management. The MOH is gathering data from health facilities, communities and analyzing results in a period of 48 hours at a total cost of not more than \$150 Dollars per poll and 70% of reports in a month are followed up at the district level in a period of 2 weeks while reducing the number of facilities that are reporting medicines stock-outs of Artemisinin based Combination Therapies (ACTS) to treat malaria from 80% to 15% (UN, 2014). The UN attributes the success to Mobile Data Management (SDSN, 2018).

Despite the existence of Mobile Data Management, there are still indicators of project bottlenecks in terms of delays in project operations such as untimely reporting, high operational costs and poor quality project out puts (Ariba, 2017). This triggered the study into investigating and establishing the relationship between Mobile Data Management and Project Success.

1.4 The purpose of the study.

The study sought to probe the relationship between Mobile Data Management and Project success, a case of Ministry of Health-Uganda, Kampala.

1.5 Study Objectives.

The study rotated along the objectives below:

1. To find out the relationship between mobile data collection and project success.
2. To examine the relationship between mobile data analysis and project success.
3. To analyse the relationship between reporting findings and project success.

1.6 Specific Research Questions.

The study endeavored to answer these questions;

What is the relationship between mobile data collection and project success?

What relationship exists between mobile data analysis and project success?

What is the relationship between mobile data reporting and project success?

1.7 Study Hypothesis.

Mobile data collection has a significant positive relationship with Project success

Mobile data analysis has a significant positive relationship with Project success

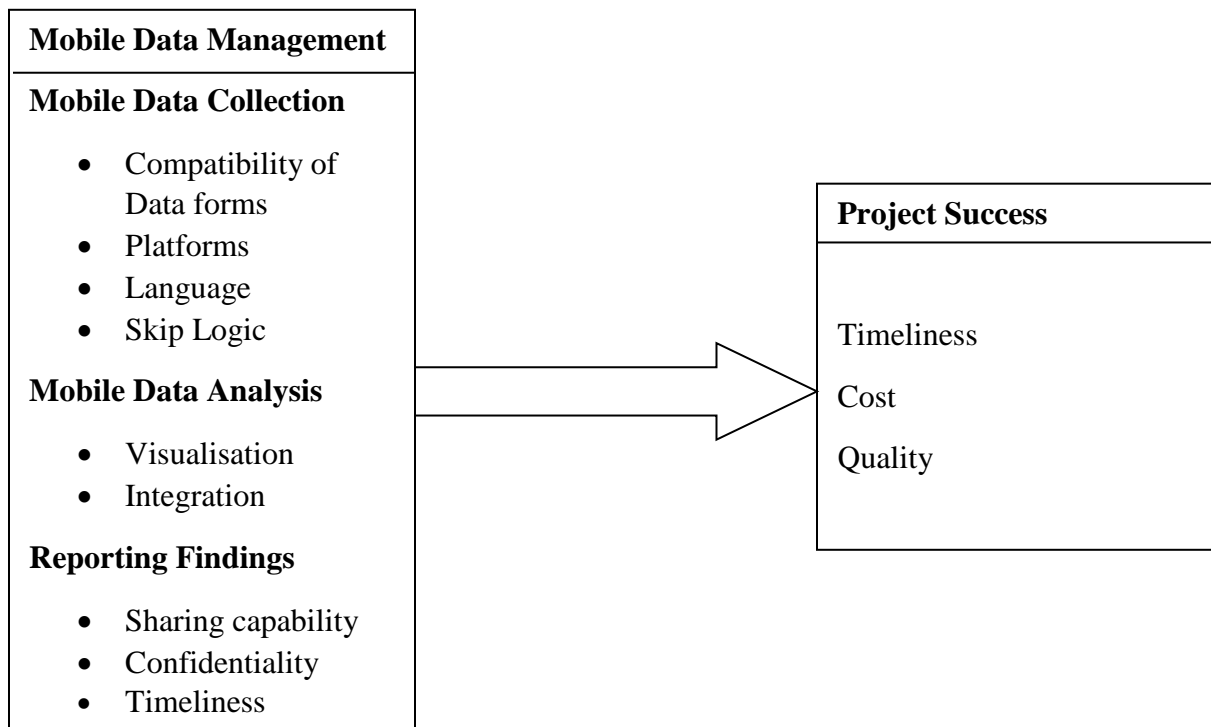
Mobile data reporting has a significant positive relationship with Project success

1.8 Conceptual Framework

For any project to succeed, information is always at the forefront of its management. Project success is determined by timeliness, cost and quality of the services or products delivered (Chinyamurindi, 2017). However, all that to be realized, data collection, analysis and reporting should be handy through data management.

Independent Variable (IV)

Dependent Variable (DV)



Source: *This framework was adopted from Chinyamurindi, 2017 and modified to suit the variables under study.*

Figure 1.1: Conceptual Framework.

The Independent Variable is Mobile Data Management (Mobile Data Collection, Mobile Data Analysis and Reporting). Dependent Variable is the Project success that is measured through timeliness, cost and quality.

There is no intervening variable as all would be intervening variables like Network may not be necessary as Mobile Data Management can still be achieved even with little influence from them.

In addition, the intervening variables may not easily be measured. It is impossible to quantify how much they influence the dependent variable.

Mobile data collection, analysis and reporting using mobile portable devices and tools support compatibility of data forms, the software platforms used, language, skip logic, visualization, integration, sharing capability, confidentiality and timeliness. When successfully implemented, these lead to timeliness of project information, cost reduction and improved quality hence project success.

1.9 Significance of the study

This study contributed to understanding of Mobile Data Management by the different scholars and project implementers. The study informed policy makers at different levels to consider MDM in Project and Program implementation. The study also increased practical knowledge of Mobile Data Management into project implementation to different project implementers for ultimate project success.

1.10 Justification of the study

There are always high Project operational costs and untimely reports which the study of MDM addressed (Belcher, 2014). It facilitates data collection, data cleaning, data analysis and reporting using Global Positioning System, which improves spatial mapping (Peltonen, 2018).

MDM contribute to development and poverty reduction approaches through interactivity, speed, lower costs and facilitating integration of different media. It facilitates a wider range and number of stakeholders; it can help the project meet validity, integrity, precision, reliability and timeliness. The study of MDM helped identify duplicates or inefficient processes and inconsistent data standards. It contributed to improved skills of the human resource (Weigel & Waldburger, 2004).

1.11 Scope of the study.

This study focused on Mobile Data collection, analysis and reporting using Mobile devices and mobile applications at **MOH** Head Quarters Kampala because it is the management unit of health systems in the country. The study concentrated on the period between 2012 to 2018.

CHAPTER TWO.

LITERATURE REVIEW

2.1 Introduction

This segment examined the related literature published about the research study. It has a systematic analysis of the write-ups that contain information leading to study variables. These were picked from textbooks, journals, newspapers and the World Wide Web.

2.2 Theoretical Review

The study espoused the Project Management Triangle theory by Martin Barnes in 1980. The theory was invented by Dr. Martin Barnes. It stresses that the Project's quality of work is controlled by the Project's budget, time and scope. It also says that Project managers can decide between those constraints. The theory suggests that a change in one constraint calls for a change in others to boost quality lest it is compromised. The theory has a focus on stakeholders within the constraints (Eby, 2017). Stakeholders are customers or shareholders of the project/organization. Hence, projects strive to meet stakeholder satisfaction through the services and products offered. It also asserts that if we adopt as a measure of analysis, the relationship between a Project and the groups who affect or are affected by it, we stand a vantage point to deal meritoriously with the difficulties of value making, ethics and managerial mindset (Parmar et al., 2010). However, most Projects tend to have their employees and Project implementers as the primary beneficiaries of the Project through fatty salaries and privileges at the expense of the other stakeholders. It is very difficult to satisfy all the stakeholders equally. Stakeholders of the Project have varying interests in the Project and have a different perception towards the Project activities and the people implementing or the leadership and management.

While the theory is a central aspect of a prosperous project, it doesn't regulate success. There are voluminous other factors other than the three constraints that may determine project

success. Sometimes the Project managers may not juggle the Tripartite Constraints, but those three aspects are continuously at play in the project (Westland, 2018).

Westland (2018) seems to agree with Caccamese & Bragantini (2012) that project managers are challenged by other constraints other than time, cost and quality to achieve Project success.

However, Morrison (2017) argues that projects must have priorities between time, quality and cost. Each project has its own champion on what it values most out of the three constraints. He advises projects to prioritise between the three constraints based on what the management values most as a core focus for the project.

2.3 Review of Related Literature.

This study positions itself with great insight of how mobile data management leads to project success. However, success of the Project is a result of a combination of many measures. Chinyamurindi, (2017) shows that there is generally no yardstick to measure Project success but narrows it to cost, time and quality. Mobile data management can effectively lead to project success if it controls the dimensions of Project success. Project success is perceived on the aspects of efficiency and effectiveness as well as the realization of a project goal. However, these aspects are synonymous. Project success can be measured using the conceptual framework of the study (Ika, 2009).

2.3.1 Mobile Data Collection and Project Success

Data collection is a crucial aspect in determining Project success as it is realized through the kind of information that is collected from the activities of the Project. Data collection has evolved over time with the influence of available mobile computing technology (van Heerden et al., 2014). van Heerden asserts that the greater impact of technology growth in data collection includes a change from physical interviewer administration to self-running. This however is not effective and probing as it would be for interviewer administration. There is always technological failure at one moment hence causing data collection interruptions which may lead to Project failure.

Physical face-to-face interviews offer a reliable method of reaching and assessing sample members. This is true as interviewers are able to visit any place hence wider coverage and compliance (Roberts, 2007 p.4). Flake disagrees with van Heerden towards self-administration of mobile data collection tools. Flake says it favours those who are literate and those with access to such devices where by leaving out so many whose opinions would be very crucial in such studies. The cost of computer-assisted administration for data collection also doubles that of when an interviewer is involved in data collection. This also affects the quality of the study (Flake et al., 2017).

Mobile self administered data collection attracts higher participation rates from young adults where by leaving out the other segments of the population. It is not comprehensive in data collection (Flake et al., 2017).

Self-data collection administration increases a burden towards respondents as it becomes tiresome and bores as it reduces the interactivity of the respondent and the interviewer, (Flake et al., 2017).

Data collection using paper and pen was perceived to be cost effective but registered numerous fatal issues to generation of quality, timely data hence becoming a cost intensive method of data collection where by time was compromised hence quality jeopardized as many data errors were generated (Adiguzel, 2008).

MDC should be a well-planned process ranging from the intended use of the data, data users, respondents, data collectors, skills, resources and the environment. All data collectors should have Mobile devices with the updated versions of data collection forms, (Peersman, 2014). Peersman suggests a participatory approach for Mobile Data Collection to involve Project staff and other stakeholders in setting the agenda in order to achieve Project success. He also suggests participatory data cleaning. However, with Mobile Data Collection, stakeholders may not have the same technological skills and reverence. This may actually contribute to set backs in the way of

power struggles and sense of data collection activity direction, which may result in delays and data collection failure or reduced morale hence Project failure.

Mobile Data Collection is very interesting as it offers portability, mobility and ease of use. It is a matter of carrying just a phone or a smart phone. It reduces the tendency of data forgery where GPS coordinates are to be captured. No need to carry a truck of questionnaire papers. Mobile data collection embeds automatic skip logic, computations, data validation checks, GPS coordinates and many other data quality checks, (Roberts, 2007).

Mobile Data Collection is both quality and cost effective compared to Pen and Paper traditional data collection method, (van Heerden et al, 2014). However, van Heerden mentions the cost of software that is used for creating and sending mobile data collection forms. Technology has advanced with time and it is upon the company's decision whether to use an open source software which is free to use or go for the pay as you use. Open source Mobile Data Collection software like Open Data Kit and Kobo Collect are extensively used. Are easy to use and offer a great deal of data validation checks. They are free to use (Harpinder, 2013).

Projects that are being implemented in developing countries can easily adopt and use MDM. This is because of the rate at which technological advancement and mobile phone usage is in the developing countries. There are high adoption and usage rates in developing countries, (Naef et al., 2014). However, with such high adoption and usage rates, many may be using phones for just making a phone call or receiving a call but not merely responding to any Project or development cause in a society. Some people in developing countries perceive a phone as a necessity while others perceive it as a luxury.

2.3.2 Mobile Data Analysis and Project Success

Collected data has to be analysed and reported. This data should be error free as it is cleaned before being analysed. Mixed methods can be applied through triangulation for an effective data analysis (Peersman, 2014).

Data analysis is easy to do using computerized devices like the automatic data aggregators. Since data is collected electronically, it can easily be analysed by the electronic devices (UN Global Working Group, 2017). However, there is technological gaps in manipulating these electronic gadgets for data analysis especially in developing countries. This calls for great skills and expertise as it may require data transfer from one device or platform to another.

Mobile Data analysis needs to be focused towards a mixture of evidence to achieve appropriate judgments and conclusions concerning Project performance. It should involve using numerical and textual data analysis mobile technologies. The analysis methodology should be put into consideration while still at project planning stage that can bring out the meaning of the data collected while considering its patterns systematically and in a transparent manner (Peersman, 2014).

Mobile data analysis can accurately be done basing on the Mobile data collection platform one uses. The automated data analysis platforms can give aggregated statistics and conclusions can be made right away basing on the kind of data collected (humanitarian-nomad.org). Mobile tools can clean, aggregate and share information. Increased performance is realized through powerful analysis and visualization capabilities and increases participation and collaboration of the different stakeholders (U.S. Global Development Lab & FHI360, n.d). The area of Mobile data analysis needs further research.

2.3.3 Mobile Data Reporting and Project Success

Mobile Data reporting is easy to integrate with any other reporting system. Timely reporting is ensured, (Bradley et al., 2018). Contrary to Bradley, the timeliness is relative to a given geographical area. In Africa and the developing countries at large, network access to send and access that information on a timely basis may not be readily feasible. It can take a period of at least one hour or more to avail such data to a central server database or after the data collectors have actually left the field yet the essence is real time information.

Application of Mobile data reporting is most urgent in Projects that have a significant potential of development progress and can achieve high levels of sustainability for example transportation, health or agricultural projects (UN Global Pulse, 2017). This however, leaves other sectors out, as they are not given a priority. For example, the Education sector. The Education sector, if given the first priority, will transitively transform the rest of the sectors as far as Mobile data management and mobile data revolution is concerned. Mobile data reporting helps Projects and programs realise results in real time. Mobile data reporting ensures feedback in two ways, to both the project implementers and project beneficiaries. Feedback should be received the way it is and must be accepted whether good or bad for better programming, (Suhonen & Paasivaara, 2011)

2.4 Summary of the Literature Review

After the review of literature, the researcher discovered a high degree of relationship between mobile data collection, analysis, reporting and project success.

However, literature is focusing more on mobile data collection and so silent about mobile data analysis. Complicated still, literature is not clear on how strong or weak this relationship is.

Further research should be done in the area of mobile data analysis.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter focuses on how the study was conducted to obtain the necessary information regarding the variables under study. The research instruments used for data collection, analysis and reporting.

3.2 Research Design.

This research study embraced the cross-sectional survey design. The research approach employed both qualitative and quantitative methods of research. This is because it allows triangulation for harmonized results and conclusion. Qualitative examination encompasses the study of verbal data and interpretivist exploration. It describes and analyses respondents' individual and collective social action, beliefs, thoughts and perspectives. Quantitative research involved the use of both numerical data and discrete variables to get the respondents level of understanding about the topic under study. Questions that required direct answers were included in the questionnaire to help quantify some variables. (Neuman, 2011).

3.3 The study population

This is the number of individuals selected by the researcher as a sample either randomly or purposively. The study focused on the staff of MOH that technically program, manage and implement Mobile Data Management. It included the Senior Management Team, Technical team and the system users. These were from different departments especially the Division of Health Information (DHI), Department of Planning and Department of Information Technology (Ministry of Health [MOH], 2019). The study targeted a total population of 73 people under the selected key departments. These were categorized here as one commissioner planning, one assistant commissioner DHI, four principle Biostatisticians, four systems administrators, two information technology officers. The study targeted four monitoring and evaluation officers, six information

systems officers, eight DHIS2 users, three statisticians, thirty electronic data management users as well as ten Electronic Medical Records officers.

3.3.1 Inclusion and Exclusion Criteria

Inclusion criteria is defined as the key features of the study population that the investigator looked at in order to answer the research question while the exclusion criteria are the features of the potential study population that meet the inclusion criteria but present additional characteristics that could interfere with the success of the study or increase their risk for unfavourable outcome.

Inclusion criteria included demographic characteristics where by male and female participants of age of consent were selected, work place geographical location, occupation, prior experience and knowledge of Information Technology, programming and implementing of Mobile Data Management leading to study objectives. Exclusion criteria included potential participants, who were not accessible at the time of conducting research. Also included those who were not ready to respond to the demands of the study. Excluded, were participants who were eliminated by the simple random sampling criteria given the sample size as defined by Krejcie and Morgan 1970.

3.4 Sample Size

A sample size of 71 respondents was aimed at out of the Population size of 73 people.

Table 3.1: Sample Size Determination

Population Category	Study Population (N)	Sample Size (S)	Sampling Technique
Commissioner Planning	01	01	Purposive
Assistant Commissioner DHI	01	01	Purposive
Four principle Biostatisticians	4	4	Purposive
Four systems Administrators	4	4	Purposive
Two Information Technology Officers	2	2	Purposive
Six Information Systems Personnel	6	6	Purposive
M&E Officers	4	4	Purposive
Three statisticians	3	3	Purposive
DHIS2 users	8	8	Purposive
Health Management Information	30	28	Simple Random

Systems (HMIS) users			
Electronic Medical Records officers	10	10	Purposive
Total	73	71	

Source: *MOH, 2019 and Krejcie & Morgan, 1970.*

3.5 Sampling techniques and procedures

Sampling is a practice of deciding on particular people from the study populace with intention of subjecting the study to them. The study employed both purposive non-probability sampling and simple random probability sampling.

3.5.1 Purposive sampling

Purposive selection is deciding on study participants with a special purpose in relation to the study. It is the best method for special situations. Purposive sampling requires a number of strategic choices about where, how and with whom to conduct research. The researcher purposively selected the Assistant Commissioner DHI, Principle Biostatisticians, Systems Administrators, Information Technology Officers, Information Systems Personnel, M&E Officers, Statisticians, DHIS2 users and Electronic Medical Records users. Purposive sampling is a convenient and effective technique for specialized research studies. It helped the researcher to locate specific people with information leading to the study objectives. (Aurini, Heaht, & Howells, 2016).

3.5.2 Simple random sampling

Simple random selection is the unpredictable selection of study element(s). Using the formulated table by Krejcie and Morgan (1970), the researcher used this method to randomly subject the study to the Health Management Information Systems (HMIS) users. Simple random sampling ensures universal and equal chance of participation by members of the targeted unit. It also offers a good generalizability (Sekeran, 2010).

3.6 Data Collection Methods

Data was collected using mixed methods. Mixed methods are referred to as triangulation. Triangulation is the study of a particular scenario using multiple perspectives (Neuman, 2011). This allowed collection of large amounts of detailed data and enabled comparison. These methods included interview, Questionnaire method and Document Review (Sekaran, 2010).

3.6.1 Interview Method

Interview method is an interactive face to face session aimed at capturing primary data from respondents. I purposively interviewed the Assistant Commissioner DHI, Two Principle Biostatisticians and One Systems Administrator. The researcher asked intended questions that guided respondents towards revealing the required information to meet the study objectives. Interview is a good method because it allowed probing into the subject under study and helped the researcher to read the verbal and non-verbal gestures of respondents. (Sekeran, 2010). The researcher therefore interviewed 4 personnel who were selected basing on their position, experience and knowledge of the study objectives.

3.6.2 Questionnaire Survey Method

Questionnaire Survey method involves a list of questions that are sent to or administered to the respondents physically or remotely with an aim of obtaining information from them. They may be self-administered or physically administered by the researcher. The researcher designed study objective led semi-structured questionnaires containing closed ended questions in English that were given to 64 respondents for self-administration. These included Principal Biostatisticians, System Administrator, Information Technology Officers, Information Systems Personnel, M&E Officers, Statisticians, DHIS2 users, Health Management Information Systems (HMIS) users and Electronic Medical Records officers. Questionnaires give a guided insight into the objectives of the study to the respondent (Neuman, 2011).

3.6.3 Document Review Method.

Document review was conducted to supplement primary data. This involved reading and assessing related literature about the study variables and objectives. These included documents from other scholars, organizational reports and the World Wide Web. It guided the researcher to deeply have an insight into the research problem and appreciate the work of other scholars (Neuman, 2011).

3.7 Data Collection Instruments

The researcher engaged three data collection instruments for data collection. These are interview guide, a questionnaire and a document checklist.

3.7.1 Interview guide

Interview guide is a series of laid down inquiries that guide the investigator during the chat session. The investigator asked questions from the interview guide to the respondent for the purpose of gathering data. Data was collected by listening to individuals and recorded some responses. This tool permitted the investigator to dig deep into the study to clarify on certain aspects of the study. In addition to giving a researcher an opportunity to read the non-verbal and verbal gestures of the respondent, this tool is flexible and can be adjusted at any moment. It allows for a personal understanding between the interviewer and the respondent. Interviews were held with the selected sample population (Sekeran, 2010).

3.7.2 Questionnaire

A questionnaire is a series of enquiries premeditated purposely to gather evidence from participants. A closed ended questionnaire was designed based on internationally and ethically accepted standards like the Likert scale. It assisted the researcher in collecting quantitative data as it is easy to administer, it is time saving and has a strict focus onto the study objectives.

Questionnaires were printed and distributed to the respondents physically (Neuman, 2011).

3.7.3 Document review checklist

A document review checklist is a list of consulted related literature concerning the study. It was developed for key literature that was rich in information leading to the study objectives at the pleasure of the researcher. This included archived records of the organization like performance reports, other scholars' published work, strategic documents and magazines. The researcher gained insight of the study area through document review.

3.8 Validity and Reliability

3.8.1 Validity

Data validity is the notch of correctness of the study discoveries centered on both the research design and the methods. The researcher used the expert judgment of selected professionals that were approached to appraise the applicability of each item in the instruments to study objectives.

Validity was determined using Content Validity Index.

$$CVI = \frac{\text{Number of items declared relevant}}{\text{No. of items}} = \frac{26}{30} = 0.86$$

No. of items

Validity allows generalization of results and answers the research question if it is above 0.7 and above (Phelan & Wren, 2005).

Table 3.2 Content validity indices for the questionnaire

Variable	Description	No. of Items	Content Validity Index
Independent	Mobile data collection	7	.857
	Mobile data analysis	6	.833
	Mobile data reporting	10	.9
Dependent	Project success	7	.857

Source: *Primary data*

3.8.2 Reliability

Reliability is the degree to which the research data collection tools produce the same stable and consistent results if administered twice to the same sample over a certain period. The score for the first time is co-related with the score for the second time to test for stability over time.

Reliability tests were done to measure the degree of stability of data gathering tools. The researcher gave tools to the same sample of respondents under the same conditions to find out if they were consistent and stable. Test re-test of questionnaires containing the same items that are supposed to quantify an impression were administered to the small group of the selected sample and scores of the responses were correlated using Cronbach's coefficient Alpha (General form of Kuder-Richardson formula) using SPSS. Reliability was passed since the coefficient was above 0.50 (Aurini et al., 2016). Reliability helps to measure internal consistency (Phelan & Wren, 2005).

Table 3.3 Reliability Indices Analysis Table

Variable	Description	No. of Items retained	Cronbach's Coefficient Alpha
Independent	Mobile data collection	6	.871
	Mobile data analysis	5	.760
	Mobile data reporting	9	.870
Dependent	Project success	6	.881

Source: *Primary data*

3.9 Procedure of Data Collection.

I obtained introductory letter from Uganda Management Institute that introduced me to Ministry of Health -Uganda. This letter showed the purpose for which I was collecting the data.

I was introduced to the different departments of focus where data is expected to be collected.

I obtained consent from participants. (Neuman, 2011). I administered the interview guide and questionnaire for data collection.

3.10 Data Analysis.

3.10.1 Quantitative Data Analysis.

The questionnaire was edited for completeness, coded and data entered into SPSS software application for analysis version 22.0 Data was analysed to generate expressive measurements such as frequencies and percentages. The data was also analysed at univariate and bivariate levels of analysis for summarized results of the study. Univariate and bivariate analysis supports deeper understanding of the analysis of the variables under study (Emjong, 2018).

3.10.2 Qualitative Data Analysis.

Interviews collected facts were edited and cleaned to obtain organized data. Themes and patterns were created. Opinions and perceptions from respondents were used to validate the questionnaires using thematic analysis with a focus on the objectives. (Neuman, 2011).

3.11 Ethical Consideration

The major ethical considerations were confidentiality and voluntarism of the respondents. Respondents were not required to write their names on questionnaire for anonymity. I also issued consent forms for respondents to sign for voluntary participation into the study. I obtained a letter of introduction from Uganda Management Institute and a clearance letter from the then undersecretary to the Permanent Secretary, Ministry of Health that introduced me to the MOH staff that clarified the purpose for which I was collecting the data.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.0 Introduction

This episode presents the breakdown and interpretation of the study results from the data gathered from respondents using questionnaires and interview guides. The quantitative data is presented using tables and graphs while qualitative data is presented as summarized from the respondents.

4.1 Response Rates

The study targeted a total of 71 respondents of whom 66 were to fill questionnaires and 5 were to be interviewed. Anticipating failure to respond of some participants, extra 4 questionnaires were added. A total of 70 questionnaires were given out to participants. However, 64 questionnaires were completed and returned representing 97% with a decline in the expected questionnaires. The study targeted 5 respondents for interviews. However, 4 respondents were interviewed giving a response rate of 80%. This rate is considered excellent as averagely internal surveys attract a response rate of 30-40% (Fryrear, 2015).

Table 4.1: The table shows distribution of Respondent Category and response rates.

Respondent Category	Issued out	Responded	Percentage response (%)
Principle Biostatisticians, System Administrator, Information Technology Officers, Information Systems Personnel, M&E Officers, Statisticians, DHIS2 users, Health Management Information Systems (HMIS) users and Electronic Medical Records officers	66	64	97%
Commissioner Planning, Assistant Commissioner DHI, Principle Biostatisticians, Systems Administrator	05	4	80%
Total	71	68	96%

4.2 Demographic characteristics of the study sample

Demographic characteristics of participants was analysed using a data set of 64 respondents for a deeper understanding of the study and have meaningful interpretations as well as conclusions. The data was cleaned using Excel and computed using SPSS to generate frequencies based on age range, sex and profession of respondents. However, the profession was categorized as; 1. IT, which included Information systems, Computer science, Information Technology, software engineering, and library. 2. Economists, which included Economics, 3. Statistician, which included statistics and Biostatistics and 4. Medical, which included any discipline that subscribes to the medical profession such as Nurse, midwifery, Lab, Doctor and Clinical Officer.

4.2.1 Distribution of respondents by gender

The study participants included both male and female staff of Ministry of Health as the table below illustrates.

Table 4.2: Sample Population study aggregated by gender

Sex	Frequency	Valid %
Male	35	55%
Female	29	45%
Total	64	100.0%

Source: *Primary data*

In the table above, male respondents were more than average the female respondents. This puts the male respondents at 55% as compared to 45% of female respondents. The results show that there are more males involved in the programming and implementation of Mobile Data Management at the MOH. However, the margin between male respondents and female respondents is very small.

4.2.2 Distribution of respondents by Age category

Table 4.3: Age category of respondents

Age Category	Frequency	Valid Percent
18 - 29	9	14%
30 - 39	23	36%
40 - 49	20	31%
50 - 59	9	14.0%
60AndAbove	3	5%
Total	64	100.0

Source: *Primary data*

Many respondents were from the age category of 30-39 years represented by a 36%. This shows that MDM is supported and implemented by MOH staff in 30-39 and 40-49 years categories. This is in line with scholar Flake et al who argue that mobile data management attracts higher interest from young adults (Flake et al., 2017).

4.2.3 Distribution of respondents by profession.

Outcomes illustrate that popularly participants have a bias in Information Technology representing a 39% while the least is Economics profession representing a 14%. This indicates that MDM at MOH is very much supported and implemented by the Information Technology, medical and Statistics Professions. However, skills can still be passed onto the rest of the professions by way of on-the-job training.

A Bar chart showing distribution of respondents by profession

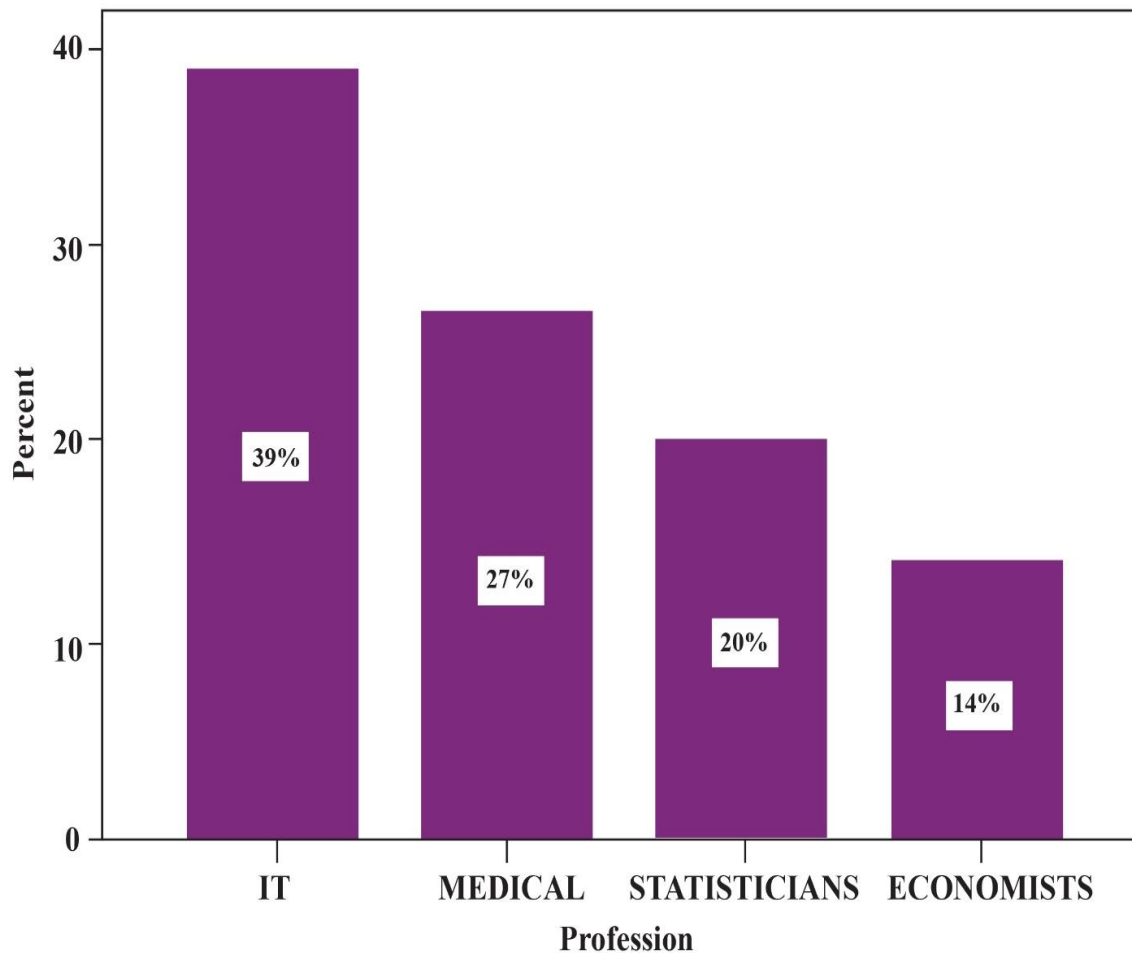


Figure 4.1: Distribution of respondents by profession

4.3 Empirical Findings

Study findings are presented here using descriptive statistics of frequencies, percentages and inferential statistics of correlation coefficient and linear regression. The researcher used a scale for participants to present their scores on Mobile data management and project success. The scale ranged from (1) Strongly Disagree (SD), (2) Disagree (D), (3) Neutral (N), (4) Agree (A), (5) Strongly Agree (SA). Scales 1 to 2 are presented as Disagree while scales 4 to 5 are presented as Agree.

4.3.1 Respondents score on overall Mobile Data Management and Project success

MDM and project success were measured using six statements to which respondents scored using the Likert scale as illustrated in the table below.

Table 4.4: Descriptive statistics for Mobile Data Management and Project Success.

Statements measuring mobile data management and project success	SA	A	N	D	SD
Project functions perform well as a result of tracking progress using mobile data management.	7.8%	46.9%	34.4%	4.7%	6.3%
Mobile Data Management contributes to effective communication through timely feedback to all project stakeholders which leads to project success.	18.8%	42.2%	26.6%	9.4%	3.1%
Quality services/ products are realised as mobile data is used to inform project processes for enhanced timely project performance leading to project success.	15.6%	54.7%	21.9%	7.8%	0%
Project staff are motivated when involved in generating data using mobile devices and associated platforms which forms a basis for good project results.	21.9%	39.1%	21.9%	12.5%	4.7%
Mobile Data Management is cost effective when using compatible Mobile Data collection forms which optimises the use of project resources.	43.8%	43.8%	9.4%	3.1%	0%
Mobile data management tools are used to measure standards of project output.	15.6%	51.6%	21.9%	4.7%	6.3%

Source: *Primary Data*

Table 4.4 illustrates majority of participants are agreeing with the declarations validating Mobile Data Management and Project success.

It was discovered that mobile data management is cost effective. This was through a statement which stated that Mobile Data Management is cost effective when using compatible Mobile Data collection forms which optimises the use of project resources. With a percentage of 87.6%, respondents scored that Mobile data management is cost effective and 3.1% disagreed while 9.4% were not sure. This proves mobile data management to be cost effective which helps a project to register success in line with implementation with in its budget.

Statistics further reveal that Quality services/ products are realised as mobile data is used to inform project processes for enhanced timely project performance leading to project success. 70.3% of the respondents agreed with the statement and 7.8% disagreed while 21.9% were not. This further shows that a project registered quality services and products that a realized from an informed point of view on a timely basis hence project success in line with quality and timeliness.

Similarly, qualitative data from respondents interviewed show that mobile data management motivates the staff to generate mobile data. One of the respondents said, *“Workers are motivated to use mobile devices unlike the bulky papers. When you give staff tablets to collect data and also give others papers, the ones with tablets will be more motivated than the ones with papers”*.

On a similar trend, one of the respondents said, *“Mobile data management greatly reduces operational costs.... since there is no need to buy papers, pay people to do data entry since the data collector enters data there and then though it may seem expensive to buy the mobile devices initially but in the long run it becomes cheaper...”*.

Finally, One of the respondents said that, *“...project quality data is ensured as this is supported by data quality checks like data validation and some applications support skip logic...”*.

This is supported by the annual health sector performance report of financial year 2014/2015 which narrates that, *“...Mobile data management has cost-effectively enhanced the quality and exchange of health data and strengthened the capacity of practitioners to use this data to improve health outcomes..... testifying to the value of investing in quality data and efficient data sharing enabled by mobile technology”* (Ministry of Health [MOH], 2015).

4.3.2 Respondents on Mobile Data Collection and Project success

To examine mobile data collection, the researcher used six declarations for respondents to score using the Likert scale values as illustrated in table 4.5.

4.3.2.1 Descriptive results for mobile data collection and project success

Table 4.5: Descriptive statistics for mobile data collection and project success

Statements measuring mobile data collection	SA	A	N	D	SD
Mobile Data Collection is timely which provides a basis for determining project performance	57.8%	37.5%	4.7%	0%	0%
Mobile Data Collection is cost effective when using compatible Mobile Data collection forms which optimises the use of project resources.	59.4%	34.4%	6.3%	0%	0%
Mobile Data Collection ensures quality of data through application of skip logics which supports data use for project performance	37.5%	50.0%	12.5%	0%	0%
Staffs are motivated to collect data using Mobile Devices and associated platforms which increases efficiency for project performance.	40.7%	23.4%	23.4%	9.4%	3.1%
Mobile Data Collection enhances technological skills of the staff which increases effectiveness for project performance.	43.8%	29.7%	20.3%	6.3%	0%
There is a close connection between the programming languages and users of the mobile data collection tools which facilitates understanding of indicators being collected.	31.3%	29.7%	25.0%	10.9%	3.1%

Source: *Primary Data*

Table 4.5 illustrates most participants are agreeing with the declarations validating Mobile data collection when it is stated that Mobile data collection is timely which provides a basis for determining project performance. 95.3% of the respondents agreed that mobile data collection is timely and 0% disagreed while 4.7% were not sure. This suggests that mobile data collection impacts project success in line with timeliness as a core aspect of measuring project success. Statistics further illustrate that mobile data collection is cost effective which leads to project success. With a percentage of 93.8%, respondents agreed that mobile data collection is cost effective when using compatible Mobile Data collection forms which optimises the use of project resources. However, none of the respondents disagreed with the statement while 6.3% of the respondents were not sure.

Additionally, qualitative data analysis from interviews seem to have the same trend with the descriptive statistics. One of the respondents said that, *“Mobile data collection supports geo coding and timely transmission of data. In this case it saves costs”*. He went ahead to say that, *“paper based systems become very expensive in terms of purchasing of papers and the bulkiness. Mobile data collection can be cost saving by way of equipping the very people on site to use these devices and send data to the Ministry. In this case costs can be reduced as Perdiems and fuel for field teams will be saved”*. He says, *“With mobile data collection you don’t need an army of data collectors to storm a region or place, you can equip those people at site to send you the data”*.

Another respondent agrees with the first respondent that it supports timeliness. However, he said that, *“it may not necessarily reduce the costs but may increase the costs initially but reduces the costs in the long run”*. He says, *“Costing the tablets may be very costly initially but in the long run it reduces the costs as it eliminates printing costs, procurement of papers and many other costs involved”*.

One of the respondents said, *“Mobile data collection ensures quality data. We use data validation checks to counter poor data”*.

A respondent said, *“Mobile data collection saves time”*, this agrees with the statistics which scored timeliness of mobile data collection at 95.3%. She said that, *“mobile devices are portable and no need to carry bulky papers which can sometimes get lost”*. When it came to cost, she said, *“data collection is cost effective as the cost of data entry is dodged since the data collection is done together with data entry”*.

However, she said that, *“there is a tendency of not wanting to lose jobs as some key personnel to support mobile data collection may want to reserve data entry jobs for their brothers, sisters and others. In that regard, mobile data collection is sabotaged”*.

The annual health sector performance report of financial year 2014/2015 disclosed that “...*Mobile Data Collection has cost-effectively enhanced the quality and exchange of health data and strengthened the capacity of practitioners to use this data to improve health outcomes...*”.

However, location data is missed leading to low follow up of certain cases, as 76% of data had no location (MOH, 2015).

4.3.2.2 Correlation results for mobile data collection and project success

In order to examine whether mobile data collection significantly affects project success, the researcher continued to statistically prove it. The researcher used the following hypothesis.

Null Hypothesis: Mobile data collection has a significant positive relationship on project success.

The assumption was verified at 95% level of significance (two tailed) using Pearson’s product moment correlation coefficient. This illustrated the direction and degree of the correlation between mobile data collection and project success. The table below illustrates the results.

Table 4.6: Correlation matrix for mobile data collection and project success

		Project Success	Mobile Data Collection
Project Success	Pearson Correlation	1	.472**
	Sig. (2-tailed)		.000
	N	64	64
Mobile Data Collection	Pearson Correlation	.472**	1
	Sig. (2-tailed)	.000	
	N	64	64
**. Correlation is significant at the 0.01 level (2-tailed).			

Table 4.6 illustrates a weak positive relationship between mobile data collection and project success, ($r = 0.472$, $p = 0.000$, $N = 64$). However, the relationship is statistically significant at 95% confidence level since the $p = \text{value}$ is <0.050 ($= 0.000$).

Conclusion on mobile data collection and project success

Verdicts established that mobile data collection has a positive statistically significant relationship with project success. The findings also affirm that mobile data collection has a significant effect on project success. Consequently, the assumption which stated that mobile data collection has a significant positive relationship and project success is accepted.

4.3.3 Respondents scores on mobile data analysis and Project success

To examine mobile data analysis, the researcher used five statements on a questionnaire for respondents to score using the Likert scale values.

4.3.3.1 Descriptive results for mobile data analysis and project success

Table 4.7: Descriptive statistics for mobile data analysis and project success

Statements measuring mobile data analysis	SA	A	N	D	SD
Mobile data analysis is timely which enables management to track project performance	54.7%	37.5%	7.8%	0%	0%
Mobile Data Analysis supports visualisation which facilitates good interpretation of project performance	35.9%	42.2%	17.2%	4.7%	0%
Mobile Data Analysis leads to reduced error rates which helps projects have quality data to support performance.	51.6%	42.2%	6.3%	0%	0%
Mobile Data Analysis supports integration with other Data Analysis tools which increases project performance.	39.1%	34.4%	21.9%	4.7%	0%
There is close connection between the nature of mobile data analysed and the standards used in measuring project output.	14.1%	40.6%	31.3%	10.9%	3.1%

Source: *Primary Data*

Table 4.7 depicts most respondents agreeing with the declarations used to validate Mobile Data Analysis and Project success. Majority of the respondents unanimously agreed to the statement which stated that mobile data analysis reduces error rates at a percentage of 93.8% and none disagreed (0% disagreed) while 6.3% were not sure. This was followed by 92.2% of the

respondents who agreed that mobile data analysis is timely which enables management to track project performance. It was found out that mobile data analysis supports visualization and supports integration with other data analysis tools which leads to project success through clear data interpretation.

Qualitative analysis from the the interviewed respondents seem to have a similar trend. One of the respondents said, *“much as the Ministry of health does not have a Mobile application that fully does the analytics, mobile data analysis is a great aspect for project implementation”*. He says, *“.... mobile data management supports trends analysis as they are able to know which people submitted their data, when and completeness is also checked. This is through its interconnectedness with DHIS2. However, data can be extracted using .csv, .xl file extensions into other applications for analysis. It is compatible with other analysis soft wares”*. This is in harmony with the integration capability of mobile data analysis.

Another respondent said, *“The mobile device can present information but they may not have the capacity to crunch numbers. It’s really a workable model to analyse data with a mobile device”*. *“....mobile data management is designed with Application Programming Interface (API) which supports extraction into other data analysis applications. We are planning to expand the use of ODK in fighting Ebola, Immunisation and others”*. Added the respondent.

The above statements are supported by the annual health sector performance report that notes that analysis is done using DHIS2 Geographical Information System (GIS) mapping and District Health Teams to follow up cases with district location identified. However, if the district location is not submitted, it is very hard to do a follow up of the case reported (MOH, 2015).

4.3.3.2 Correlation results for mobile data analysis and project success

In order to inspect whether mobile data analysis significantly affects project success, the researcher used SPSS to statistically prove it.

Null Hypothesis: Mobile data analysis has a significant positive relationship on project success.

The hypothesis tested at 95% level of significance using Pearson’s product moment correlation coefficient to measure the direction and degree of the relationship between mobile data analysis and project success as illustrated.

Table 4.8: Correlation matrix for mobile data analysis and project success

		Project Success	Mobile Data Analysis	
Project Success	Pearson	1	.709**	
	Correlation			
	Sig. (2-tailed)			.000
	N			64
Mobile Data Analysis	Pearson	.709**	1	
	Correlation			
	Sig. (2-tailed)			.000
	N			64

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

Table 4.8 above illustrates a moderate positive relationship between mobile data analysis and project success, ($r = 0.709$, $p = 0.000$, $N = 64$). However, the relationship is statistically significant since p value is <0.050 ($= 0.000$).

Conclusion on mobile data analysis and project success

Judgments proven that mobile data analysis has a positive statistically significant relationship with project success. The findings also affirm that mobile data analysis has a substantial effect on project success. Therefore, the assumption which stated that mobile data analysis has a significant positive relationship and project success is accepted.

4.3.4 Respondents score on mobile data reporting and Project success

In order to examine mobile data reporting, the investigator used nine declarations for respondents to score using the Likert scale values as shown in table 14 below.

4.3.4.1 Descriptive results for mobile data reporting and project success

Table 4.9: Descriptive statistics of mobile data reporting and project success

Statements measuring mobile data reporting	SA	A	N	D	SD
Mobile Data Reporting reduces reporting time which makes donors informed and send the required project funds according to schedule	67.2%	26.6%	3.1%	3.1%	0%
Mobile Data reporting reduces operational costs which helps projects to optimise scarce resources	65.6%	26.6%	4.7%	3.1%	0%
Mobile Data Reporting ensures large coverage is reached through sharing capabilities and integration compatibilities which increases project awareness leading to project support and sustainability.	56.3%	37.5%	4.7%	1.6%	0%
Mobile Data Reporting enhances quality data which leads to evidence based project decisions hence project	39.1%	45.3%	10.9%	3.1%	1.6%

success.					
Feedback is timely where Mobile Data reporting is involved which helps a project keep track of progress of its performance.	43.8%	46.9%	7.8%	1.6%	0%
Mobile Data Reporting improves stake holder involvement which helps the project to achieve concerted support at all levels hence success.	15.6%	35.9%	32.8%	12.5%	3.1%
Mobile Data Reporting increases appropriate resource allocation which increases optimal resource utilisation for project performance	10.9%	59.4%	20.3%	6.3%	3.1%
Mobile Data Reporting increases accountability which increases loyalty of project staff and beneficiaries towards project performance.	40.6%	21.9%	23.4%	9.4%	4.7%
There is close connection between the nature of mobile data reported and the standards used in measuring project output.	15.7%	48.4%	21.9%	10.9%	3.1%

Source: Primary Data

Table 4.9 illustrates most participants are agreeing with the declarations used to validate Mobile Data Reporting and Project success. 93.8% agree that mobile data reporting reduces reporting time and 3.1% disagree while 3.1% were not sure. This means that Mobile data reporting is timely which is in line with project success core aspect of timeliness. This is followed by a statement that mobile data reporting ensures large coverage is reached which increases project awareness leading to project support and sustainability at 93.8% of respondents in agreement with the statement. Statistics further shows that mobile data reporting provides timely feedback and improves

stakeholder involvement which helps the project to achieve concerted support at all levels hence success.

Qualitatively, the interviewed respondents noted a similar trend. Mobile data reporting supports stakeholder involvement. One of the respondents said, *“we use the sms capability of Mobile Data Management to coordinate the different stakeholders. We also use U-report to inform and mobilise the masses on certain campaigns like the mass immunization campaign”*. However, he mentioned that some MDM short messages may attract a cost and it can only be sent to someone whose telephone number is registered in the system. He also mentioned that, *“we are collaborating with telecommunication companies to leverage on the technology to do mobilisation specific to certain regions currently with MTN”*.

One of the respondents also said that, *“mobile data reporting supports accountability in terms of staff absenteeism especially where GPS Coordinates are captured. Staff lie that they have gone to the field yet they are not. They write a report and account for funds yet they were not in the field. Mobile data management can eliminate this through GPS coordinates and time stamp capturing. Staff organize to absent themselves. This is called organized absenteeism. You may find only the laboratory person today and tomorrow you find a store keeper. The citizen can send a message through the platform that at this facility there is no health workers or there is no medicine”*.

In support of mobile data reporting findings, the annual health sector performance report mentions the anonymous hotline where the ministry received feedback (9214 reports) from the community about the health service related issues. The document also mentions district specific feedback from the ministry back to the community where 24% of the reports received had districts mentioned as location data to facilitate action which helped to improve service delivery hence

project success (MOH,2015). Mobile Data Management was designed to leverage on the widely used mobile phones at a very low cost and wide scale (Health Monitoring Unit, 2014)

4.3.4.2 Correlation results for mobile data reporting and project success

In order to examine whether mobile data reporting significantly affects project success, the researcher used SPSS to prove it with a focus on the following hypothesis.

Null Hypothesis: Mobile data reporting has a significant positive relationship on project success.

The assumption was verified at 95% level of significance using Pearson’s product moment correlation coefficient to illustrate the direction and degree of the relationship between mobile data reporting and project success as illustrated in table 15 below.

Table 4.10: Correlation matrix for mobile data reporting and project success

		Project Success	Mobile Data Reporting
Project Success	Pearson	1	.737**
	Correlation		
	Sig. (2-tailed)		
	N		
Mobile Data Reporting	Pearson	.737**	1
	Correlation		
	Sig. (2-tailed)		
	N		

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

Table 4.10 illustrates a moderate positive relationship existing between mobile data reporting and project success, ($r = 0.737$, $p = 0.000$, $N = 64$). The relationship is statistically significant at 95% confidence level since the p value is < 0.050 ($= 0.000$).

Conclusion on mobile data reporting and project success.

Discoveries established that mobile data reporting has a statistically significant relationship with project success. The findings also affirm that mobile data reporting has a substantial effect on project success. Therefore, the assumption which specified that mobile data reporting has a significant positive relationship with project success is accepted.

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This episode presents the summary, discussions, conclusions and recommendations based on the findings reaped from the study as showed by the study objectives. The study objectives were; To find out the relationship between mobile data collection and project success at the Ministry of Health Uganda - Kampala, To examine the relationship between mobile data analysis and project success at the Ministry of Health Uganda - Kampala, To analyse the relationship between mobile data reporting of findings and project success.

5.1 Summary of results

The purpose of the study was to inspect the relationship between Mobile Data Management and Project success at Ministry of Health -Uganda, Kampala. The independent variable was mobile data management categorized under mobile data collection, mobile data analysis and mobile data reporting, the dependent variable was project success. Data was collected, analysed and findings were obtained.

5.1.1 Mobile data collection and project success.

There was a weak positive relationship between mobile data collection and project success. The p-value for mobile data collection was less than 0.050 (0.000), given $r = 0.472$, the researcher therefore accepted the relationship as statistically significant. This suggests that mobile data collection impacts project success.

5.1.2 Mobile data analysis and project success.

The discoveries illustrated a modest positive association between mobile data analysis and project success. The p-value for mobile data analysis was less than 0.050 (0.000), given $r = 0.709$, the investigator consequently recognized the relationship as statistically substantial. This implies that improvement in mobile data analysis positively impacts on project success. Similarly, a decline in data analysis negatively impacts project success.

5.1.3 Mobile data reporting and project success.

A moderate positive relationship between mobile data reporting and project success is illustrated. The p-value for mobile data collection was less than 0.050 (0.000), given $r = 0.737$, the investigator espoused the association as statistically significant. This denotes that changes in mobile data reporting has bearings on project success. Similarly, a decline in mobile data reporting negatively impacts on project success.

5.2 Discussion of results

Under this section, the researcher discusses findings based on the study objectives

5.2.1 Mobile data collection and project success.

The study illustrates mobile data collection having a substantial relationship with project success at Ministry of Health Uganda-Kampala. The findings show that mobile data collection significantly affects project success at Ministry of Health Uganda – Kampala. This means that mobile data collection is paramount to project success. Mobile data collection increases timeliness in project execution. Mobile data collection employs the compatible mobile data forms, the

platform used multi languages and skip logic. These capabilities contribute immensely to project success. This is supported by van Heerden et al who assert that the influence of mobile data management bears a greater impact on project data collection, which contributes to project success (van Heerden et al., 2014).

There was a positive relationship between mobile data collection and project success. However, there other factors that influence project success. This denotes other elements outside the variable mobile data collection, which contribute to project success. This is supported by scholar Chinyamurindi who stresses that there are generally other elements which contribute to project success beyond mobile data collection (Chinyamurindi, 2017)

The study established that there are still challenges to mobile data collection, as it has not been embraced by all the departments or programs at the Ministry. Technical skills and attitude of some system users are still challenges to mobile data collection.

van Heerden et al, forecasted these challenges that emerge over time with the influence of the available mobile computing technology and related technological adoption (van Heerden et al., 2014).

To offer a solution, Peersman suggests a participatory approach which calls for all Project staff and other stakeholders in setting the agenda of mobile data collection to attain Project success (Peersman, 2014).

This was given a solution by one of the respondents who said that, “*mobile data collection would effectively cut operational costs if the data personnel at the sites/health facilities were equipped with skills that they can send data using mobile devices which is currently the case at Ministry of Health*”.

One of the respondents said that, *“there is a tendency of wanting to create data entry jobs for their brothers, sisters and others. In that regard, mobile data collection is sabotaged”*. However, this can be addressed through an organizational policy to adopt mobile data management.

5.2.2 Mobile data analysis and project success.

The study illustrates that mobile data analysis has a substantial relationship with project success at Ministry of Health Uganda-Kampala. The findings show that mobile data analysis significantly affects project success at Ministry of Health Uganda – Kampala. This means that mobile data analysis is paramount to project success. Mobile data analysis has good visualization capability. It also supports integration with other data analysis tools to support good data interpretation and presentation of results contributing to quality timely analysis at reduced cost.

There was a moderate positive relationship between mobile data analysis and project success. Mobile data analysis contributes to project success though there are other factors that influence project success. This suggests that there are factors outside mobile data analysis, which contribute to project success. This is in line with Chinyamurindi who argues that generally there are many other factors that contribute to project success (Chinyamurindi, 2017)

The study established that there are still challenges to mobile data analysis as there is currently no mobile application that is being used for analytics. Technical skills to configure these systems and funding are still a challenge. This observation is in line with the US Global Development Lab and FHI360 who advocate for analytics through powerful analysis and visualization capabilities of the mobile application (U.S. Global Development Lab & FHI360, n.d).

However, such challenges are addressed by Peersman who advocates for analysis through triangulation for an effective data analysis (Peersman, 2014). Additionally, this is supported by the UN Global working group who argue that data analysis is easy to do using computerized mobile devices like the automatic data aggregators since data is collected electronically. This is made possible as data can easily be analysed by the electronic devices using the automatic aggregators (UN Global Working Group, 2017).

5.2.3 Mobile data reporting and project success.

The study illustrates that mobile data reporting bears a significant positive relationship with project success at Ministry of Health Uganda-Kampala. The findings also illustrate that mobile data reporting significantly affects project success at Ministry of Health Uganda – Kampala. Mobile data reporting has a data sharing capability, confidentiality and timeliness in reporting of data and project results. This means that mobile data reporting influences project success.

This is in line with scholar Suhonen and Paasivaara who stress that mobile data reporting enhances feedback for both project implementers and beneficiaries for better programming and tracing of progress hence project success (Suhonen & Paasivaara, 2011). To add more weight, Bradley et al, are in support of the findings on mobile data reporting. They argue that using mobile data reporting, timely reporting is ensured leading to project success (Bradley et al., 2018).

A moderate positive relationship between mobile data reporting and project success is determined from the findings. Mobile data reporting contributes to project success. This denotes that there are factors outside mobile data reporting, that contribute to project success. It is technically true as confirmed by Chinyamurindi who stresses that there are many other elements that lead to project success other than mobile data reporting (Chinyamurindi, 2017).

As anticipated by Flake et al, 2017 the study established that there are still challenges to mobile data reporting. There is no access to the database of people's contacts especially those outside the health sector to whom mobile reporting would be paramount. Technical skills to advance such technology and funding. Challenges of technology advancements in line with the cost and technical know-how are evident at Ministry of Health. These are challenges of mobile data reporting which may lead to compromised quality of data and may leave out some important participants with crucial interest in the project (Flake et al., 2017)

5.3 Conclusions

5.3.1 Mobile data collection and project success.

The findings indicated that mobile data collection has a significant effect to project success at Ministry of Health Uganda – Kampala. This means that improvement in mobile data collection shall present a significant positive effect to project success at Ministry of Health Uganda – Kampala.

The study confirmed that the alignment of project plans to national strategy and development plans can yield greater success in a very short time. However, the Ministry of Health is finding it difficult to successfully implement mobile data collection in all its programming because of the constraints of funding. Ministry of Health together with her partners are doing everything possible to fund electronic mobile data collection from infrastructure to training. It is therefore concluded that mobile data collection enhances project success.

5.3.2 Mobile data analysis and project success.

The findings indicated that mobile data analysis bears a significant consequence on project success at Ministry of Health Uganda-Kampala. This shows that improving mobile data analysis can have a tremendous positive effect on project success.

Ministry through the Division of Health Information trains the staff towards data analysis but this is done by extraction of data from mobile data tools to other supported analysis tools like Microsoft Excel and SPSS. The use of mobile data collection has helped MOH to monitor the medicines stock outs, managing diseases outbreaks, speeding up and boosting eHMIS as well as obtaining feedback from communities on the status of health services delivery (Ministry of Health [MOH], 2012).

However, analysis of mobile data collection needs to be boosted with latest technology, skills in data analysis, compatibility of more data analysis tools and personnel. If mobile data analysis is improved, there will be greater improvement in the attainment of project success.

5.3.3 Mobile data reporting and project success.

The findings indicated that mobile data reporting bears a significant constructive effect to project success at MOH Uganda- Kampala. This denotes that mobile data reporting leads to project success at Ministry of Health Uganda- Kampala. Similarly, a decline or an increase in mobile data reporting leads to a significant decline or increase in the project success.

Although findings of this study revealed that mobile data reporting is significant to project success, there are other elements that may lead to project success. These can be learning and improvement of project performance based of the previous data, mobilization of both stakeholders and resources. According to Chinyamurindi, 2017, project success can be obtained through reduced costs, timeliness and quality which are necessitated by mobile data management.

In conclusion, mobile data reporting during project execution will significantly lead to project success.

5.4 Recommendations

The study came up with recommendations in support to the objectives of the study.

5.4.1 Mobile data collection and project success.

These recommendations will help in improving project and program performance if implemented.

The study found out that mobile data collection saves on time of data collection. It is therefore, recommended that mobile data collection be implemented in projects for timeliness.

Mobile data collection is cost effective.

It should therefore be incorporated in the planning and programming of the line programs and projects to minimize operational costs incurred during hardcopy data collection. The study also shows that staffs are motivated during mobile data collection. Staff motivation through mobile data collection should be upheld since it reduces on work overload as it is multitasking. Trainings and refreshers should be conducted regarding mobile data collection for greater skills enhancement.

5.4.2 Mobile data analysis and project success.

The ministry together with her partners should boost mobile data analysis with latest technology that can support real time analytics. Enhancing skills in data analysis by way of training and mentorships. Adoption of mobile data management tools that are multi-purpose. These can do data collection, analyse and report. These tools can be configured to analyse data based on real time data collection.

The Ministry should enhance data analysis by way of adopting multi compatibility mobile data analysis tools.

5.4.3 Mobile data reporting and project success.

The Ministry should use avenues of connectivity to the National Identification Registration Authority and telecommunication companies for phone databases to support mobile data programing for the Ministry programs and campaigns.

The Ministry should adopt mobile data collection tools that allow multiple connectivity. These tools can be configured to connect to a web based resource or client or staff database for the purpose of communicating results, feedback or coordination.

In order to meet deadlines, Ministry programs and project managers, should factor in mobile data management as it has been proven to do well on timeliness and being cost effective.

5.5 Limitations of the study

During the study, the researcher was only limited to the Ministry of Health Uganda- Kampala. The research was not able to cover a bigger sample population by involving many other projects that use mobile data management in Uganda. This may limit the generalizability of the findings to projects or programs being implemented by other organisations.

The busy schedules of the Ministry of Health Uganda Kampala personnel, made the researcher limit the sample size and departments as many would be engaged in different official activities.

5.6 Areas for further research

This study concentrated on the correlation between mobile data management and project success.

Under mobile data management there was mobile data collection, mobile data analysis and mobile data reporting while project success was premised on project timeliness, quality and cost (budget).

However, mobile data analysis was found out to be influencing project success with 49.5% variance though not technically implemented in many mobile data management applications.

Future researchers in the same area should consider a wider population sample by involving more projects or organisations for generalizability effect.

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APPENDICES

Appendix i: Introduction

I am Joseph Mbuga a masters' student from Uganda Management Institute Kampala undertaking a study on the Mobile Data Management (mTrac, Open Data Kit, Kobo Collect, SurveyCTO) at Ministry of Health. The purpose of this study is to investigate the relationship between mobile data management and project success. All responses given will be treated with a high degree of confidentiality and will be used for academic purposes only.

Thank you so much for your time.

Appendix ii. A Consent Form

I, of Ministry of Health Uganda, agree to voluntarily participate in a research study on 'Mobile Data Management and Project success at Ministry of Health.'

The information disclosed here is only intended to support the researcher academically and will only be used for the purpose of the research study.

Thank you for your time.

Signature

Appendix iii: Interview Guide

No.	Questions	No.	Questions
1.	Respondent’s No:	2.	1. Male 2. Female
3.	Age Range: 1. 18-29 2. 30-39 3. 40-49 4. 50-59 5. 60 Above	4	Gender: What is your Profession?

5. Ministry of Health uses electronic mobile systems to collect, analyse and report data using mTrac and other applications. How are they helpful in project performance?

Mobile data collection:

- 6. How does mobile data collection support timeliness?
- 7. How does mobile data collection increase the project quality of deliverables?
- 8. How does mobile data collection lead to reduced operational costs?

Mobile data analysis:

- 9. How do you analyse the data using these Mobile Applications/Systems?
- 10. Are these systems compatible with other data analysis applications?
- 11. How does the analysis support data quality?
- 12. How do you use Mobile Data analysis to support program or project timeliness?

Mobile data reporting:

- 13. How does Mobile Data reporting support stakeholder involvement?
- 14. How does Mobile data reporting ensure timely communication or feedback?
- 15. How does Mobile Data reporting widen coverage?
- 16. How does mobile data reporting improve accountability?

Thank you so much for your time.

Appendix iv: Questionnaire

No.	Questions	No.	Questions
1.	Respondent's No:	2.	Gender: 1. Male 2. Female
3.	Age Range: 1. 18-29 2. 30-39 3. 40-49 4. 50-59 5. 60 Above	4.	What is your Profession?

To assess Mobile Data Management and Project Success statements: In the table below, **tick or circle** the number that is the most representative of your opinion about the statement in the columns at a scale of 1 to 5, **1. Strongly Disagree, 2. Disagree, 3. Neutral, 4. Agree, 5. Strongly Agree.**

No.	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
5	Project functions perform well as a result of tracking progress using mobile data management.	1	2	3	4	5
6	Mobile Data Management contributes to effective communication through timely feedback to all project stakeholders which leads to project success.	1	2	3	4	5
7	Quality services/ products are realised as mobile data is used to inform project processes for enhanced timely project performance leading to project success.	1	2	3	4	5

8	Project staff are motivated when involved in generating data using mobile devices and associated platforms which forms a basis for good project results.	1	2	3	4	5
9	Mobile Data Management is cost effective when using compatible Mobile Data collection forms which optimises the use of project resources.	1	2	3	4	5
10	Mobile data management tools are used to measure standards of project output.	1	2	3	4	5

To find out the relationship between mobile data collection and project success.

No.	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
11	Mobile Data Collection is timely which provides a basis for determining project performance	1	2	3	4	5
12	Mobile Data Collection is cost effective when using compatible Mobile Data collection forms which optimises the use of project resources.	1	2	3	4	5
13	Mobile Data Collection ensures quality of data through application of skip logics which supports data use for project performance	1	2	3	4	5
15	Staffs are motivated to collect data using Mobile Devices and associated platforms which increases efficiency for project performance.	1	2	3	4	5

16	Mobile Data Collection enhances technological skills of the staff which increases effectiveness for project performance.	1	2	3	4	5
17	There is a close connection between the programming languages and users of the mobile data collection tools which facilitates understanding of indicators being collected.	1	2	3	4	5

To examine the relationship between mobile data analysis and project success.

No.	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
18	Mobile data analysis is timely which enables management to track project performance	1	2	3	4	5
19	Mobile Data Analysis supports visualisation which facilitates good interpretation of project performance	1	2	3	4	5
20	Mobile Data Analysis leads to reduced error rates which helps projects have quality data to support performance.	1	2	3	4	5
21	Mobile Data Analysis supports integration with other Data Analysis tools which increases project performance.	1	2	3	4	5
22	There is a close connection between the nature of mobile data analysed and the standards used in measuring project output.	1	2	3	4	5

To analyse the relationship between reporting findings and project success.

No.	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
23	Mobile Data Reporting reduces reporting time which makes donors informed and send the required project funds according to schedule	1	2	3	4	5
24	Mobile Data reporting reduces operational costs which helps projects to optimise scarce resources	1	2	3	4	5
25	Mobile Data Reporting ensures large coverage is reached through sharing capabilities and integration compatibilities which increases project awareness leading to project support and sustainability.	1	2	3	4	5
26	Mobile Data Reporting enhances quality data which leads to evidence based project decisions hence project success.	1	2	3	4	5
27	Feedback is timely where Mobile Data reporting is involved which helps a project keep track of progress of its performance.	1	2	3	4	5
28	Mobile Data Reporting improves stake holder involvement which helps the project to achieve concerted support at all levels hence success.	1	2	3	4	5
39	Mobile Data Reporting increases appropriate resource allocation which increases optimal resource utilisation for project performance	1	2	3	4	5

30	Mobile Data Reporting increases accountability which increases loyalty of project staff and beneficiaries towards project performance.	1	2	3	4	5
31	There is close connection between the nature of mobile data reported and the standards used in measuring project output.	1	2	3	4	5

Thank you very much.

Appendix v: Document Review checklist

Annual Health Sector Performance Reports

Monitoring and Evaluation Reports

mTrac Manual

Journals

Health Systems Strengthening and Investment Plan

Appendix vi: Table for determining sample size

Table for Determining Sample Size from a Given Population

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size.
S is sample size.

Appendix vii: Introductory letter from Uganda Management Institute



UGANDA MANAGEMENT INSTITUTE

Telephones: 256-41-4259722 /4223748 /4346620
256-31-2265138 /39 /40
256-75-2259722
Telefax: 256-41-4259581 /314
E-mail: admin@umi.ac.ug

Plot 44-52, Jinja Road
P.O. Box 20131
Kampala, Uganda
Website: <http://www.umi.ac.ug>

UMI/DPSA/SBM/35/048

Your Ref:

27/09/ 2019

Our Ref:

TO WHOM IT MAY CONCERN

MASTERS IN MANAGEMENT STUDIES DEGREE RESEARCH

Mr. Joseph Mbuga Number: 18/MMSME/KLA/MAY/092 is a student at Uganda Management Institute pursuing a Masters in Management Studies specializing in Monitoring and Evaluation

In partial fulfillment for award of the Masters, he is conducting a research study titled "*Mobile Data Management and Project Success: A case of UNICEF Uganda Country Office, Kampala*"

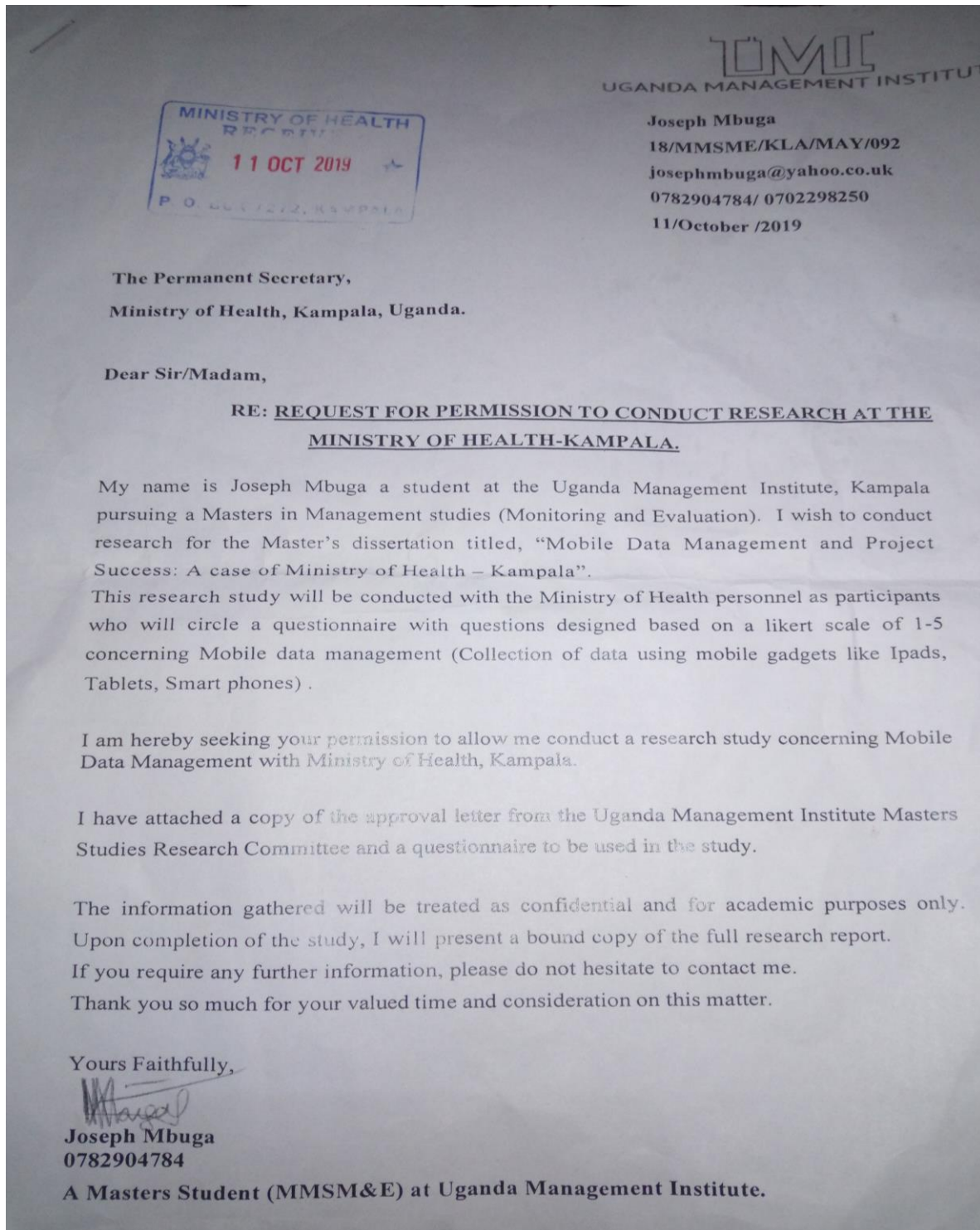
This communication therefore serves to formally request you to allow him access any information in your custody/organization, which is relevant to his research.

Thank you for your co-operation on this matter

Yours Sincerely,

Lugemoi Wilfred Bongomin
**CHAIRPERSON RESEARCH COMMITTEE
SCHOOL OF BUSINESS AND MANAGEMENT**

Appendix viii: Research application letter to Ministry of Health



Appendix ix: A clearance letter from Ministry of Health

Telephone: General Lines: 256 - 417 - 712260
Permanent Secretary's Office: 256 - 417 - 712221
Toll Free: 0800100066
E-mail: ps@health.go.ug
Website: www.health.go.ug



Ministry of Health
P. O. Box 7272
Plot 6, Lourdel Road,
Wandegeya
KAMPALA
UGANDA

IN ANY CORRESPONDENCE ON

THIS SUBJECT PLEASE QUOTE NO. ADM.313/340/01

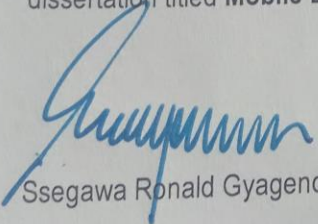
22nd October, 2019

Mbuga Joseph
Uganda Management Institute
0782904784

**REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT THE MINISTRY OF HEALTH-
KAMPALA**

Reference is made to the above subject regarding permission to conduct research at the Ministry of Health.

This is to inform you that your request has been granted to conduct research for the Master's dissertation titled **Mobile Data Management and Project Success: A case of Ministry of Health.**


Ssegawa Ronald Gyagenda

For: PERMANENT SECRETARY