

**INSTITUTIONAL-BASED FACTORS AND  
IMPLEMENTATION OF DIGITAL LITERACY  
PROGRAMME IN PRIMARY SCHOOLS: A CASE OF MWEA-  
EAST SUB-COUNTY, KIRINYAGA COUNTY IN KENYA**

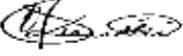
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**A Research Submitted in Partial Fulfillment of the Requirements  
for the Award of Master in Project Planning and Management of  
the University of Nairobi**

**July, 2023**

## DECLARATION

This scholarly work is forthwith declared original in making

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## **DEDICATION**

The academic writing was done in honour of my wife Rachael Muoti and my children Denishia and Elsie owing to their resolute inspiration and support.

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

<b>DLP</b>	Digital.Learning.Programme
<b>E-HRM</b>	Electronic.Human.Resource.Management
<b>GOK</b>	Government of Kenya
<b>HRM</b>	Human.Resource.Management
<b>ICT</b>	Information Communication Technology
<b>MESEO</b>	Mwea-East Sub-County Education Officer
<b>NACOSTI</b>	National Commission for Science Technology and Innovation
<b>PMI</b>	Project Management Institute

## ABSTRACT

Implementation of digital literacy projects often faces operational challenges that reflect inadequacy in the framework of implementation. The inadequacy is attributed to poor decisions when rolling out the project. Wrong perspectives lead to ineffective decisions and the resultant effect is prolonged or unending projects. The study examined institution-based perspectives that sway implementation of Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya. Specific objectives were to establish how digital infrastructure, ICT technical support, board of management leadership and teacher-training influences implementation of Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya. The study was guided by change theory and empowerment theory. Cross-sectional approach to survey design was applied in this research study. Target population was 977 comprising of 30 head-teachers, 30 chairmen of board of management, 30 chairpersons of infrastructure sub-committee and 887 teachers from public primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya. A sample of 278 respondents was arrived at by means of Krejcie-Morgan tabulation for determination of the sample as cited in Bukhari (2020). Proportionate-stratified random sampling was utilized to obtain 9 head-teachers, 9 chairmen of board of management, 9 chairpersons of infrastructure subcommittee and 251 teachers from each sub-population. Whereas quantitative data was gathered from the teachers using structured questionnaires, qualitative data was collected from the head-teachers using an interview guide. Quantitative data was analysed using descriptive and inferential statistics namely: frequency, percentages, mean, standard deviation and correlation analysis. Analysis of qualitative data was achieved through coding, transcribing, theme generation and summarizations. The relationship between institutional factors and implementation of Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya decreased in the following order teacher training ( $r=0.88$ ), digital infrastructure ( $r=0.71$ ), ICT technical support ( $r=0.49$ ) and BOM leadership ( $r=-0.04$ ). Project managers involved in planning for highly technical projects should provide practical interventions in addressing technical problems underscore. In addition, project managers should use their soft-project management skills like leadership based on situation because the finding from this study found no connection between BOM Leadership and Implementation of Digital Literacy Programme. The Government of Kenya is recommended to use the findings strengthen integration of technological and technical Implementation of future Digital Literacy Programmes through appropriate policies on digital devices and content. Future studies should consider factor analysis and mixed methodologies so as to triangulate multiple means of data collection and analysis and draw more generalizable results.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

Technologies are fast catching up with almost all aspects of our day to day activities and the future of education as well. In recent past, education technologies have evolved at a swift speed leading to enormous changes in the way learning is communicated, transferred and applied. For instance, significant developments have been recorded in educational related hardware like mobile phones, e-readers, tablets, interactive whiteboards (Atenas and Havemann 2013). In addition, globalization and liberalization of technology are powering revolutions in educational practices and school infrastructure. As a result, new digital opportunities and demand for knowledge-based economies is compelling governments to cascade installation of Information Communication Technology (ICT) in learning institutions. However, apart from installing the right ICT infrastructure and ensuring availability of the right educational resources, it is of essence to offer the right guidance, support and leadership environment as well as promoting availability of locally adapted content to teachers (Syamalamba, 2011). Hence educational development agencies and government should get concerned about the utilization of digital technologies in learning and how it is transforming education.

Past studies have assessed how ICT is integrated in education through teaching and learning processes with limited dimensions that negate the role of the implementing institution towards successful implementation of the programme (Wanjala et al., 2011; Omio et al., 2019; Muraya, 2017; Kingori et al., 2016). Most of government-supported digital programmes fail due to lack of innovative and flexible mechanism in adapting to the dynamic environmental needs (Lekhi, 2007). Failure of school heads to embrace technologically driven practices and exhibit technologically driven leadership is claimed to hinder implementation of Digital Literacy Programmes (Grownow, 2007). Poor implementation of digital programmes is additionally accredited to slow assimilation of ICT knowledge and skills by instructors (Keiyoro, 2011). Inadequate ICT infrastructure limits adoption of technologies in classrooms (Vanderlinde, 2011).

Globally, the evolution of digital technology in educational systems has provided additional opportunities and challenges to schools. In Portugal, Finland, Sweden and Denmark, digital technologies have successfully been adopted and integrated into schools and the results includes enhanced practice-based teaching and mobile-based technologies and collaborative devices (OECD, 2016). In Turkey, literacy in technology promotes holistic child development of (Kardes,

2020). In India, the computer literacy programs were initiated over 20 years ago and have undergone huge transformations right from inferring the basic knowledge in terms of basics of computers and hardware to building digital professionals within the education system, thanks to well-organized systems (Kapur, 2019). In Indonesia, some of the supporting factors for successful implementation of school's Digital Literacy Programmes are adequate facilities, suitable infrastructure and competent teachers while the inhibiting factors are lack of motivation from students (Istikomah et al., 2020). In response, workforce motivation is necessary.

In Africa, many countries including Nigeria, South Africa, Ghana, Mauritius, Botswana and Rwanda have prioritized application of ICT in their education systems. An evaluation study of Digital Literacy Programme in South Africa recommends for adoption of a design of digital educational programs that are audience oriented for greater effectiveness (Sieberhagen and Cloete, 2020). Thus it is important to investigate possible factors as to why implementation of Digital Literacy Programmes does not go beyond installation of devices and educator preparation and why teachers have not been empowered adequately to actualize the implementation of the programme (Maina and Waga, 2020). Teachers should be able to augment their knowledge and competencies in identifying, evaluating, organizing and making use of information and imparting knowledge to learners. In addition, teachers should be able to aid in decision making to resolve the outstanding issues in the programme implementation discourse.

Generally, implementation of Digital Literacy Programmes continue to face infrastructural and human related challenges that hinder exploitation of technology in schools. This is further aggravated by lack of incentives to teachers and rapid enrolment of learners in primary-schools. In order to enhance the success rate of digital programmes, Kapur (2019) recommends for the following to be considered: (a) programme resources be adequate, (b) curriculum and instructional strategies be comprehensive, (c) program content be relevant, (d) duration of the program and goals and objectives be practical, (e) proper guidance and supervisions (f) adequate support framework to the digital infrastructure. Other requirement includes: competent instructors equipped with computer knowledge for them to effectively impart knowledge and understanding to the students in terms of lesson plans and concepts. In addition, there is need for effective leadership for guiding the operations of the programme implementation. However, there is concern that deeper and regular implementation of the Digital Literacy Programmes would facilitate immersion and institutionalization of Digital Literacy Programme essential for mainstreaming of the practices for sustainability (Gioko and Kadzo, 2018).

Authors have tried to contextualize institutional factors from the aspects of the problem underscore. For example, Gudono (2016) explores institutional factors as the aspects that influence stability of an organization discourse in terms of: legitimacy, culture, social norms, technology, crime, leadership, strategy and power-sharing. This calls for more comprehensive approaches to explain and resolve institutional problems that affect implementation of a digital programme discourse. In order to fill these gaps, the research aimed to assess the institutional-based that influence implementation Digital Literacy Programme primary-schools in Kirinyaga County Kenya.

There are two structural issues with regard to access of digital and equipment in schools namely: the perception of digital tools is perceived and considerations of digital tools at school (Brites, 2020). The major components of digital literacy are literacy in: computers, informatics, on-line reading, media, web and communication literacy (Heitin, 2016). In classwork set up, the basic technological tools required are devices such as: laptops, desktops, digital class calendar, annotation tools, Back channel devices, white boards, white board pens and dusters, projectors, iPads, internet and surfers, student digital portfolios, vocabulary tool and social Media (Murry, 2015). For effective realization of digital technology adoption, there must be adequate installation and access to digital infrastructure, networks and other supportive resources (Tekale, 2018). Relevant digital content enhances adoption and applicability of the digital knowledge. The digital content must be current and supported by data (Santos and Serpa, 2017).

Smooth adoption and transfer of digital technology cannot be realized without adequate technical support. ICT technical support promotes integration of technology to the routine activities which in turn builds confidence among the technology users (Nesbit, 2019). In schools, technical support promotes diffusion of technology for innovative learning (Alshammari, 2020). Effective technical support system promotes and motivates learners' interactivity behavior and confidence in the use of technology. As a result, system interactivity with learners improves the perceived importance and benefits of using technology (Baleghi-Zadeh et al., 2017). Furthermore, technology supported approach in digital programme implementation boosts acceptability and intention of learners to embrace and use technology (Essel and Wilson, 2017). Thus another institutional factor is technical support.

Leadership is the use of technical, human and conceptual skills to ensure that appropriate tools, techniques and procedures are appropriately applied in order to coordinate the efforts of the followers towards successful realization of set goals. Lastiningsih, et al. (2019). This implies that

leadership requires humanitarian skills so as to help integrate people with work and motivate them. In addition, conceptual skills help leaders to effectively solve project issues while building stronger relationships between people and between people and situations. Leadership coordinates the project teamwork for optimal productivity and successful performance of the project (Senaratne and Samaraweera, 2015). While leadership relates to the success of a project (Omony et al., 2018), good leadership enhances effective implementation of a programme. The study considers board of management leadership as good predictor of the implementation of Digital Literacy Programme.

Implementation of digital programmes in schools is often faced by additional constraints of low digital human resources skills for easy adoption (Brites, 2020). In modern times, technology users and learners with no skills are finding it difficult to navigate virtual environment without the support of technicians (Tekale, 2018). Thus there is need to train and equip technology users with the essential set of skills and knowledge for effective technology adoption and transfer. This would help then access, use, manage, integrate and adopt digital resources in construction and sharing of knowledge with other people.

Institutional factors have been explored in the contexts of management robustness, staff competency and asset and capital management. Due to empowering nature of Digital Literacy Programme, the study on institutional factors focused on digital infrastructure, ICT technical support, board of management leadership and teacher-training. By creating a link between programme implementation with the institutional factors is important in shedding light on the structural issues for continuous learning and improvement of programme effectiveness (Tarus, et al., 2015).

In Kenya, the Ministry of Education came up with the Digital Literacy Programme for primary-schools with an aim of integrating technology in the process of learning and teaching. The desire for the government of Kenya to have a technology-based education can be traced from the Sessional Paper 1 of 2005 where ICT in education was projected as the major turning point towards innovative learning and productive collaboration between teachers and learners (Government of Kenya, 2005). In 2007, the government developed a policy on integrating technology in its arms and a lot of investment in education was done with the view of transforming labour right from schools. (Government of Kenya, 2007). Since then, the government has continued to invest in digital education so as to promote access, relevance and quality of education in Kenya. In 2019, the National Information, Communications and Technology (ICT) policy

became the guiding framework for the adoption and integration of technology not only by government agencies but also in the education sector (Government of Kenya, 2019). The operationalization of the ICT policy framework in education sector has taken place through initiatives like the Digital Literacy Programme (DLP) that pay priority to primary-schools (Government of Kenya, 2018).

The Kenyan government has strived to improve the quality of education through Digital Literacy Programme (DLP) as envisaged in the Vision 2030. However, the digitization process has achieved below the expectations. The objectives for the Digital Literacy Programme (DLP) were to integrate ICT in learning and teaching process, install appropriate ICT infrastructure in public primary-schools, to support teachers in teaching, promote development of appropriate digital content through accreditation and to promote sustainable acquisition of learning support mechanisms in the education sector. However, there are multiple hurdles in every stage of the implementation of the Digital Literacy Programme. For example, report suggests that there exist some institutional obstacles to the adoption of the digital learning technology programme in teaching and learning which have negatively influenced the implementation of the Digital Literacy Programme in Primary-schools (Muraya, 2017; Government of Kenya, 2018).

According to Mugo (2017), about 89.2 % of the targeted public primary-schools are already furnished with the DLP devices and around 91,000 tutors have been coached on how to use digital devices with over 95% of schools having been connected to electricity. However, some questions are yet to be answered particularly on how suitable and reliable are these efforts. Despite the government's effort to digitize school learning, questions arise on the logic of the programme and whether the trained teachers and technicians can effectively use the technology in their duties. Moreover, question is whether teachers and students are in a position to access and utilize the multimedia content. The research investigated the institutional-based factors persuading implementation of Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya.

## **1.2: Statement of the Problem**

The implementation of DLP in Mwea-East Sub-county continues to face challenges relating to inadequate capacities to use the technology by teachers, poor ICT infrastructure, unreliable power supply, and low network connectivity leading to low utility and adoption of the digital literacy technology (Mutembei et al., 2019). This is caused by systematic disconnects between planning, organizing and coordination of the programme implementation. Still in Mwea-East Sub-county,

there are complaints by teachers over poor and hurriedly organized training which has caused a lack of enough technical skills to use the gadgets properly. Also, there are complaints related to poor infrastructure including inadequate digital accessories, poor power supply, low network connectivity and lack of secure storage rooms as well as poor maintenance of the gadgets, conflicting school timetable for computer lessons and school plans (Mutembei et al., 2019). This indicates disconnect between the coordination of the programme implementation which may impede the realization of the expected goals of developing innovative skills for knowledge-based economy. Owing to the alarming and unique challenges facing implementation of DLP in Mwea-East in Kirinyaga County plans, the research aimed to establish how institutional-based factors (digital infrastructure, technical support, board of management leadership and teacher-training) related to implementation of Digital Literacy Programme in elementary schools in Mwea-East Sub-County in Kirinyaga County.

Past studies including the one conducted by Salim and Onjire (2020) on the relationship between digital infrastructure and performance of digital literacy project in the public primary-schools in Nakuru County show that digital infrastructure has statistically significant influence on performance of Digital Literacy Program. Another study by Omonyo et al. (2018) on leadership in the success of public infrastructural megaprojects in Kenya reveals that effective leadership cannot be isolated in successful implementation of infrastructural projects. Still in Kenya, Omito et al. (2019) did a study on how teachers' computer skills influenced the integration of laptop computers in public primary school institutions in Homa Bay County whereby teachers' with strong foundation in computer skills was found to be a necessary condition for effective implementation of DLP in Kenya. However, the trio studies were contextually and geographically elsewhere unlike the present study which aimed to examine how institutional-based factors affecting implementation of Digital Literacy Programme in elementary schools in Mwea-East Sub-County in Kirinyaga County, Kenya. In addition, the trio studies were conceptually limited in terms of variables and indicators. The current study used variables with comprehensive indicators in order to build evidence for concluding how institutional-based factors affecting implementation of Digital Literacy Programme in elementary schools in Mwea-East Sub-County in Kirinyaga County, Kenya.

### **1.3: Purpose of the Study**

The research examined how institutional-based factors influenced implementation of Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County.

#### **1.4: Objectives of the Study**

This study was guided by these objectives:

- i. To establish how digital infrastructure influences implementation of Digital Literacy Programme in primary school institutions in Mwea-East Sub-County in Kirinyaga County, Kenya.
- ii. To examine the influence of ICT technical support on implementation of Digital Literacy Programme in primary school institutions in Mwea-East Sub-County in Kirinyaga County, Kenya.
- iii. To determine the influence of board of management leadership on implementation of Digital Literacy Programme in primary school institutions in Mwea-East Sub-County in Kirinyaga County, Kenya.
- iv. To determine how teacher-training influences implementation of Digital Literacy Programme in primary school institutions in Mwea-East Sub-County in Kirinyaga County, Kenya.

#### **1.5: Research Questions**

The research answered these questions:

- i. How does digital infrastructure influence implementation of the Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya?
- ii. What is the influence of ICT technical support on implementation of the Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya?
- iii. What is the influence of board of management leadership on implementation of the Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya?
- iv. How does teacher-training influence implementation of the Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya?

#### **1.6: Hypotheses**

The null hypotheses were stated as:

H<sub>01</sub>: There is no significant relationship between digital infrastructure and implementation of the Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya.

H<sub>02</sub>: There is no significant relationship between ICT technical support and implementation of the Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya.

H<sub>03</sub>: There is no significant relationship between board of management leadership and implementation of the Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya.

H<sub>04</sub>: There is no significant relationship between teacher-training and implementation of the Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya.

### **1.7: Significance of the Study**

Outcomes from this study were anticipated to benefit all parties involved in the execution of Digital Literacy Programme in Kenya. The understanding of the influence of institutional-based factors namely: digital infrastructure, ICT technical support and board of management leadership on implementation of Digital Literacy Programme would strengthen decision making for any policy or structural adjustments by the government so as to enhance the effectiveness of the programme. In particular, the results from the influence of the digital infrastructure and ICT technical support on implementation of the digital literacy programme would give opportunity to the planners and implementers of Digital Literacy Programme for enhancing future programme designs. Outcomes on the contribution of board of management leadership and teacher-training on execution of Digital Literacy Programme would bolster the programme management role in leading others towards effective achievement of the programme goals. Teachers can benefit from the outcomes on the effects of teacher-training on the implementation of DLP through change of attitude. Also, parents can gain better insights and understanding on the context under which the DLP was implemented for the necessary support and ownership. The results and limitations of the study forms basis for further investigation of the research phenomenon under different contexts.

### **1.8: Delimitations of the Study**

Basically, delimitations are features that limit research boundaries (Creswell, 2014). First, the study is delimited to the research site of Mwea-East Sub-County in Kirinyaga County Kenya whereby all public primary-schools have experienced implementation of Digital Literacy Programme (DLP). Kirinyaga County was among the first counties to implement the DLP providing more valid grounds for conducting the study. The study was also delimited to four variables namely: digital infrastructure, ICT technical support, board of management leadership and teacher-training. These variables were perceived as enablers of DLP. Also, the study is delimited to the research respondents namely: teachers and school head-teachers, as they were actively involved in the implementation of the DLP.

### **1.9: Limitations of the Study**

This is basically the design characteristic that influence the interpretation of the research findings (Creswell, 2014). One limitation of the study is the conflict between personal values about technology and implementation of the Digital Literacy Programmes which may lead to biased responses. The study was conducted in constraining time which limited collection of trend data. There were limited past empirical studies focusing on DLP Kenya which constrained the literature in developing the research.

### **1.10: Basic Assumptions of the study**

Assumptions can be unexplained beliefs which are accepted as true and without them the research problem may not exist. The study assumes that the research respondents are familiar with the Digital Literacy Programme and that they were cooperative and honest for valid responses. The target population is assumed to be normally distributed for used of parametric statistical tests.

### **1.11: Definition of the Significant Terms**

There are several significant terms applied in the study:

<b>Board of management leadership</b>	Referred to the art of influencing, sharing, guiding, encouraging and coordinating efforts towards achieving the goals of the Digital Literacy Programme and was indicated by the levels of: communication, motivation and conflict resolution.
<b>Digital Infrastructure</b>	Referred to the basic services essential for the digital literacy capability in schools and was indicated by the following indicators: digital tools (electricity), digital learning materials and digital networks.
<b>Digital Literacy</b>	Referred to the understanding and capabilities in utilizing computers and other technologies in instructional processes in primary school institutions.
<b>Digital Literacy Programme (DLP)</b>	Referred to the Kenyan Government's programme aimed at transforming Kenya's education system through ICT integration in imparting knowledge so as to empower learners and teachers with digital literacy skills.
<b>ICT Technical Support</b>	Referred to the maintenance services offered to enable efficient integration of ICT in schools and was indicated by levels of: responsiveness, reliability and professionalism.

<b>Implementation of Digital Literacy Programme</b>	Referred to the activation of programme plans in order to achieve the set targets and was indicated by levels of: meeting goals, teaching effectiveness, teaching innovativeness and teacher contentment, information and data literacy and digital content creation
<b>Institutional-based factors</b>	Referred to the attributes of programme organization essential for activating the programme concept to reality. In The study, institutional-based factors are: digital infrastructure, ICT technical services and board of management leadership and teacher-training.
<b>Teacher-training</b>	Referred to the process of imparting teachers with relevant knowledge, skills and practices in handling the adoption of digital literacy and transfer of the same to learners as indicated by type of training, frequency and practical skills imparted.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

Empirical literature is reviewed in line with research themes namely: implementation of Digital Literacy Programme, digital infrastructure and implementation of Digital Literacy Programme, ICT technical support and implementation of Digital Literacy Programme, board of management leadership and implementation of Digital Literacy Programmes, and teacher-training and implementation of Digital Literacy Programme. Also discussed is the theoretical together with the conceptualization frameworks.

#### **2.2 Implementation of Digital Literacy Programme**

From system perspective, PMI (2017) describes implementation as the practice of bringing together peoples' effort and programme operations while keeping in check factors of change in order to deliver desired outputs. However, the dynamics of the volatile environments in which programmes operate makes the assessment of the programme implementation even more complex. This is due to divergence approaches utilized by programme managers so as to flexibly cope up with the forces of change (San Cristóbal et al., 2018).

In attempt to draw a framework of assessing implementation of an e-programme, Aranyossy (2018) proposes assessment of implementation of an e-government programme from the success dimension of plans activation. Blackovics (2019) argues that the maturity of an e-programme is what determines its success depending on the implementation discourse. An e-programme implementation goes beyond organization boundaries and requires development of tools that link internal processes environment (Zandhuis and Wuttke, 2019). It implies that implementation of a digital programme cannot be evaluated without deconstructing the contextual dimensions.

Katona (2019) and Petitjean (2016) propose a broad anatomy for evaluating implementation of a digital programme in fulfilling aims, success, creativity, efficiency and client contentment. Kardes (2020) used indicators of effectiveness when evaluating the implementation of Digital Literacy Programme in Turkey and the results led to the conclusion that literacy in technology is important contributor to learner's growth. Istikomah et al. (2020) used achievement indicators to appraise the implementation of the literacy programme in Indonesia. The results were in agreement with the evaluation findings on Digital Literacy Programme in South Africa that outcome assessment indicators give a more valid account of programme implementation (Sieberhagen and Cloete, 2012).

Programmes must systematically evolve and adapt to the constantly changing environment so as to navigate potential risks and uncertainties. Therefore, use of design efficiency when assessing implementation efficacy is recommended (Nashihuddin, 2018). By addressing design challenges implementation of programme is enhanced since programme objectives become more flexible for programmes to swiftly respond to the unforeseen situations more easily (Braskovics et al., 2019). Due to the empowering and innovative nature of ICT programmes, the study considers implementation of Digital Literacy Programme from the dimensions of meeting goals, teaching innovativeness and effectiveness as well as teacher contentment

### **2.3 Digital Infrastructure and Implementation of Digital Literacy Programme**

Digital literacy is associated with literacy in computer, network, informatics, on-line reading, media literacy, web, communication and collaboration and social literacy (Heitin, 2016). However, a successful implementation of Digital Literacy Programme must be reinforced by sufficient infrastructure. In learning organizations for example, digital tools and resources are considered as precursors for successful knowledge adoption and technology transfer (Brites, 2020). Teachers and learners will require appropriate digital rooms or spaces, digital devices like laptops, white boards, white board pens and dusters, projectors, iPads, internet and surfers among others (Murry, 2015). Installation of the right and appropriate digital infrastructure eases acquisition of the right digital skills and knowledge with minimal constraints (Tekale, 2018). In addition, good digital infrastructure ensures that the digital system is equipped with the relevant and current digital content which makes it easy for the adoption and application in learning (Santos and Serpa, 2017). Kardes (2020) summarizes the role of digital literacy from the dimensions of adequate digital software and hardware. Gillen et al. (2018) adds that the right digital media provides innovative learning experiences to learners.

Suryahadikusumah and Nadya (2020) conducted a survey on digital literacy and its relations to develop innovative guidance program in Indonesia and where the descriptive statistics demonstrated that greater communication and collaboration are realized when the right hardware and software are installed in the digital programme. However, the study was limited to descriptive statistics thus hindering higher statistical tests on the relationships underscore. Consequently, it limited knowledge on the influence of software and hardware infrastructure on the implementation of ICT project. In order to fill the knowledge gap, the study used both inferential as well as descriptive statistics in order to help understand relationships between digital-infrastructure and implementation of Digital Literacy Programme in literacy programme in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya.

In Nakuru County Kenya, Salim and Onjure (2020) investigated the influence of digital infrastructure on performance of DLP in the public elementary schools whereby a random sample of 246 was used and correlational analysis indicated that digital infrastructure has significant statistical influence on performance of Digital Literacy Program (DLP for  $r=0.679$ ;  $p<0.01$ ). While the research gave important insights on the importance of digital infrastructure in the performance of DLP the study was limited to Nakuru County therefore limiting inference of the results. The gap was filled by examining the impact of digital infrastructure on implementation of Digital Literacy Programme in Primary School institutions in Mwea-East Sub-County in Kirinyaga County Kenya.

Kardes (2020) did a case study to assess implementation of Digital Literacy Programme in Turkey with 20 teachers who were purposively sampled using snowball sampling. Content analysis indicated that relevant digital materials and safe digital content fosters the innovative child-development in digital and technological literacy which in turn stimulates reliable digital transformation. While the study gives insights on the role of digital materials in successful implementation of a digital programme, the study was limited to non-probability which poses threat to representativeness and generalization of the findings. The study used stratified random sampling so as to increase representativeness of the findings on the influence of digital infrastructure on implementation of the Digital Literacy Programme in primary school institutions in Mwea-East Sub-County in Kirinyaga County Kenya.

#### **2.4 ICT Technical Support and Implementation of Digital Literacy Programme**

Digitization of knowledge transfer and learning requires continuous support from the experts so as to smoothen the technical challenges relating to the breakdown and adoption. The technical support offered by ICT experts helps to lower risks of rejection as a result of fear of system breakdown or complexity of the technology understanding. In addition, the technical support smoothen integration of digital technology to the routine activities of teaching hence making it easy for the users to assimilate (Nesbit, 2019). Digital learning in schools is enhanced through innovative technological diffusion from technical support (Alshammari, 2020). Thus effective technical support system promotes and motivates learners' interactivity behavior and confidence in the use of technology. This leads to better system interactivity and better useful of technology (Baleghi-Zadeh et al., 2017). Essel and Wilson (2017) observes that technologically aided approach boosts acceptability and intention of learners to embrace and use technology.

Salim and Onjure (2020) examined the influence of ICT integration on performance of digital literacy project in public elementary school institutions in Nakuru County Kenya whereby a random sample of 24 was used and correlational analysis showed that limitation in technical support was negatively affecting the execution of Digital Literacy Programme. Contextually, this research was limited within Nakuru County thus limiting the generalization of the finding. So as to test the applicability of the results, the research determined the impact of ICT technical support on implementation of DLP in primary-schools in Mwea-East Sub-County in Kirinyaga.

In Spain, Skoda et al. (2020) explored the function of informational assistance and support on implementation of digital literacy and while using online questionnaire and a random sample 116 respondents. Inferential statistics suggested that digital literacy support helps to demystify the curricula content thereby increasing the use of digital technologies by learners. However, the findings could not be generalized owing to the non-probability sampling method used. To counter the limitation, the research relied on structured-questionnaire and unstructured key informant interviews to collect both qualitative and quantitative data for concluding the influence of ICT technical support on the execution of Digital Literacy Programme in Kirinyaga.

In Jordan, Eneizan et al. (2018) conducted a survey on the factors impacting on the successful adoption of digital human resource management (e-HRM) in universities. Data was collected using questionnaire from a random sample of 288 university employees. Inferential statistics disclosed that technical assistance reinforces trust on recognized ease of use and importance of e-HRM in universities. While these results provided a new dimension of enhancing technology adoption through ICT technical support, the study was limited to quantitative data gathered using questionnaire thus limiting content validity. To overcome this limitation, the study triangulated quantitative together with qualitative data so as to strengthen the conclusion on the influence of ICT technical support on implementation of Digital Literacy Programme in primary school in Mwea-East Sub-County in Kirinyaga County, Kenya.

## **2.5 Board of Management Leadership and Implementation of Digital Literacy Programme**

Effective leadership involves use of technical, human and conceptual skills to ensure that appropriate tools, techniques and procedures are appropriately applied so as to coordinate people's efforts in achieving given objectives (Lastiningsih, et al., 2019). For leadership to thrive in programme implementation, humanitarian skills are used to help integrate people with work and motivate them. In addition, conceptual skills are used to effectively solve programme issues while building stronger relationships between people and between people and situations. Also,

leadership coordinates the project teamwork for optimal productivity and successful performance of the project (Senaratne and Samaraweera, 2015). Thus leadership strength is manifested by the ability to supervise workforce, use of resources and execution of tasks towards successful realization of programme objectives.

Programmes succeed when leaders are able to articulate the programme plans as per the guidelines with a commitment to ensure smooth coordination of programme activities and ensuring correct and adequate information flows, controlling dynamic changes, developing workforce morale through rewards and close supervision (Cash and Fox, 2012). Leadership helps to guide and mobilize programme resources that most likely leads to better implementation outputs and outcomes. To ensure this, school leaders can do the following; spearhead better programme linkages, good communication and articulation of the programme objectives, guide and build the morale of the work force, make informed decisions, promote creativity and innovation in the execution of programme activities. This may also work through building strong teamwork that builds synergy amongst the workers and ensuring continuous learning and improvement. By ensuring quality digital infrastructure, practice guidelines, reliable technical support and effective leadership can add value to the programme implementation discourse by contributing to the programme logic and increasing utilization of organizational strengths. As such, leadership relates to the success of a project (Omony et al., 2018).

In Romania, Androniceanu et al. (2015) explored on the leadership capacities for project based school management success. While data was gathered from a convenient sample of 96 teachers, descriptive results showed that effective leadership competencies are critical determinants for successful implementation of school projects. However, the findings had limited generalization because of the use of non-probability sampling methods. In order to increase the external validity of the study, probability sampling method was used so as to enhance inferencing the results on the contribution of board of management leadership on implementation of DLP in Kirinyaga County.

Lastiningsih et al., (2019) explored on the effective leadership and management designs for implementing school literacy programme in Indonesia. Through questionnaires and interviews, data was obtained from a sample of 20 students and 5 teachers descriptive and inferential-statistics revealed that the participatory designs were effective in successful implementation of Digital Literacy Programme. Nonetheless, the study relied on a small sample size of 25 to conclude the findings. Whereas correlational analysis requires over 104 sample size for conclusive finding (Best and Khan, 2009), The study used a sample size larger than 104 so as to perform inferential

statistics for concluding how board leadership connects with implementation of Digital Literacy Programme in primary school institutions in Mwea-East Sub-County in Kirinyaga County, Kenya.

Omonyio et al. (2018) did a survey on effects of project-leadership in Kenya to the successful outcome of public-infrastructure projects whereby a random sample involving 195 employees. Were utilized. From this data inferential and descriptive statistics showed that leadership had an outstanding impact on the successfulness of public infrastructure projects. However, the study suffered conceptual limitation by assessing leadership from the angle of project thus negating processes involved during implementation of the project. In filling the gaps, the link of board leadership and implementation of Digital Literacy Programme in primary-schools in Kirinyaga, Kenya was explored.

## **2.6 Teacher-training and Implementation of Digital Literacy Programme**

Digital literacy skills build the capacity of teachers and families in providing good guidance to their children (Donohue, 2014). Acquisition of digital skills and knowledge is not only a necessary competence for a modern person but also is one of the precursors for successful social and labour inclusion (Milena and Sladana, 2019). Whereas digital literacy is all about understanding and accessing the available sources of knowledge and understanding when and how to apply it (Britt et al., 2017), there is need to develop a curriculum that will teach students in critical evaluation and use of online information sources. According to Young (2001), present educators should attain technological awareness and functions with recognition of its capability to educate by three notable procedures namely: awareness of the technology assimilation complexities in relation to the discipline being taught, discovering and appreciating the technological advancements and its implications of constantly developing knowledge acquisition and comprehending technological implications in order to frame relevant instructions and questions, formulation of work-based criteria, application of approaches alongside technology incorporation, pondering on the results of immersion and re-examining these approaches constantly.

In modern times, technology users and learners with no skills are finding it difficult to navigate virtual environment without the support of technician (Tekale, 2018). Thus there is need to train and equip technology users with the essential set of skills and knowledge for effective technology adoption and transfer. This would help then access, use, manage, integrate and adopt digital resources in construction and sharing of knowledge with other people. Training should focus on a digital curriculum that is built on good content which facilitates opportunities for technology integration that is recommended for its effective diffuse in schools (Gioko and Kadzo, 2018).

Istikomah et al. (2020) did a descriptive qualitative study on implementation of the literacy program in Indonesia whereby semi-structured interviews and a purposive sample of 6 were relied on. Content analysis revealed that competent teachers favored digitization. However, the study was limited to qualitative methodological approaches which pose biasness to the study thus lowering content validity essential for concluding the results. Generalization of the results on how teacher-training links to implementation of DLP in primary school institutions in Mwea-East Sub-County in Kirinyaga County, Kenya was achieved through this study using mixed methods to increase content-validity.

In Uganda, Malunda and Atwebembeire (2018) conducted a survey on training and teaching and learning resources and tutor productiveness in government-supported secondary schools. Questionnaires, observation along with interviews were used to gather data from 82 head-teachers and 1,024 teachers. Descriptive statistics demonstrated that training, availability and use of teaching and learning resources notably contribute to teacher productiveness in inferring knowledge to learners. But the study could not be generalized to Kenyan schools due to contextual differences in education systems. This research examined the linkage of teacher-training and execution of Digital Literacy Programme in primary-schools in Kirinyaga, Kenya.

In Kenya, Homa Bay County, Omito et al. (2019) did a survey in public primary-schools on teachers' computer mastery as preliminary for the integration of laptops. Numerical and narrative data were collected from 362 teachers and 85 head-teachers in primary-schools using open-headed interviews and closed-headed questionnaires. The results showed that teachers with strong foundation in computer skills was a necessary condition for effective implementation of DLP within Kenya. However, the study was limited to baseline evaluation in the implementation of DLP in Kenya. Moreover, Homa-Bay County limited the scope of the research. To overcome this limitation, the study examined the influence of teachers' training on implementation of DLP in primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya.

## **2.7 Theoretical-Framework**

In this study the founding theoretical frameworks were change and structural empowerment theories

### **2.7.1 Change Theory**

The change-theory was conceived by Lewin Kurt in the year 1947 as a foundation model towards effecting changes in organizations. This theory states that there are three forces that drive change

namely: driving forces, retraining forces and equilibrium. Thus to realize a meaningful change, three steps are involved: (a) unfreezing which entails mind-setting, (b) changing which entails transitioning from old ways and (c) freezing which entails crystallization and elevating change process (Orr and Davenport, 2015). Change theory demystifies the adoption and transfer of digital technologies in institution learning by offering a simpler approach through which managers, leaders and project implementers can utilize to effect the digital integration. Mwaniki and Mugambi (2017) simplifies the adoption of change theory in project management using strides of inducing radical change, reducing the disruption and ensuring permanent change adoption.

According to Leach et al. (2016), change theory provides implementers of ICT programmes with practical change management approach through capacity building, rationalisation of the procurement function and giving the necessary technical support for ease adoption of digital technology. Thus change theory was used to explain the how institutional factors (digital infrastructure, ICT technical support, board of management leadership and teacher-training) contributes to the implementation of DLP in primary-school institutions in Kirinyaga County, Kenya. In addition, change theory was useful in proving guidance on the best means of overcoming the DLP implementation deficiencies through appropriate institutional adjustments.

### **2.7.2 Structural Empowerment Theory**

Structural Empowerment theory or Kanter`s structural empowerment theory was developed in 1993 to advance organizational behaviour and empowerment. This theory states that empowerment in an organization is stimulated by work climate whereby workers can easily access resources, information, support and opportunities for continuous learning and improvement. Degner (2005) asserts that empowered employees become more committed and accountable in their daily duties thus leading to overall success of organization endeavours.

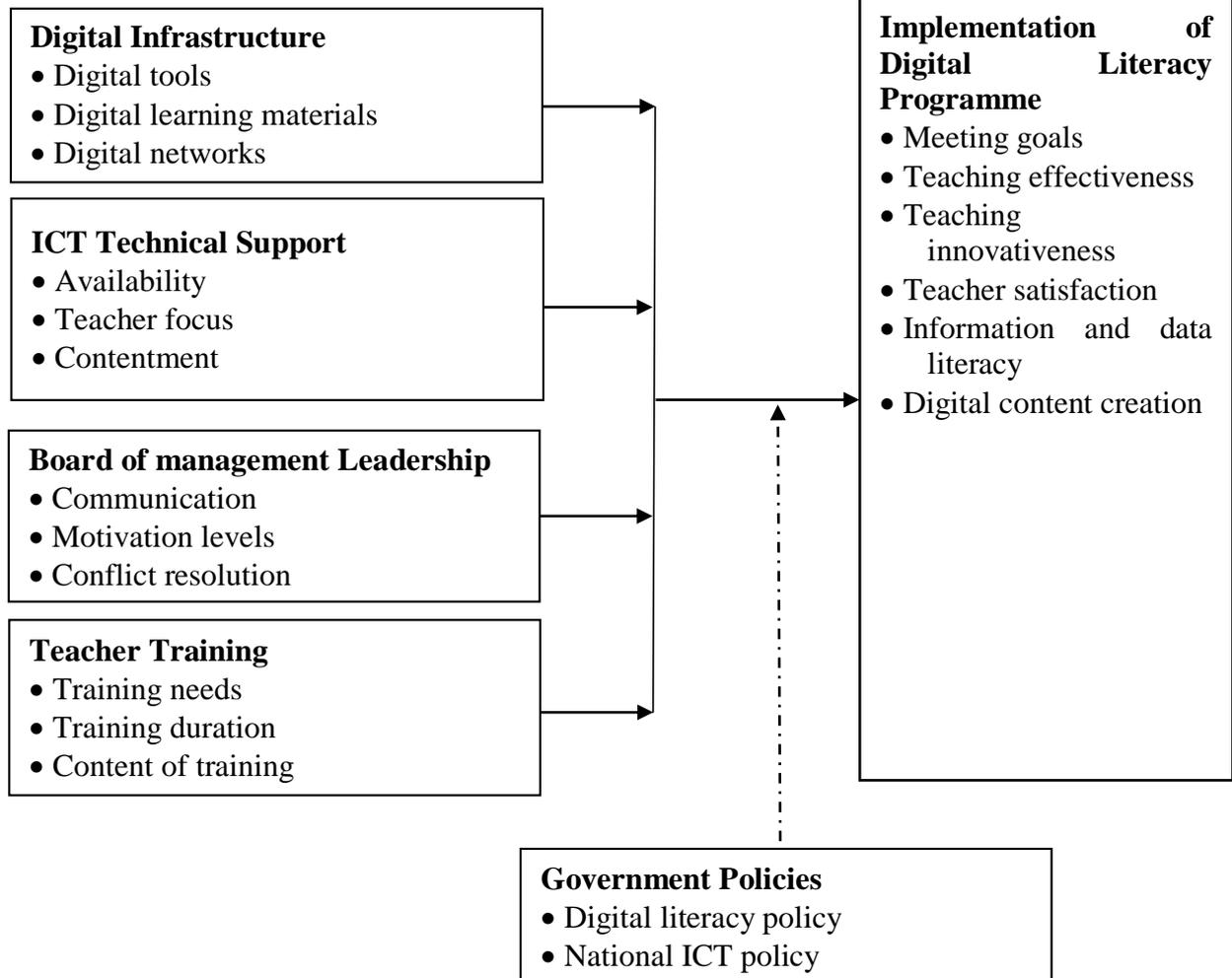
Empowerment theory is based on the principle that when equity, integration, ownership, partnership and accountability is vested in an individual and organization, workers become empowered to successfully realize the expected goals (Batson, 2004). Kanter`s empowerment theory has reliably been applied in fields not limited to health, management, engineering, education (Larkin et al., 2018; Kluska et al., 2006). In the study, empowerment theory was used to argue that installation of digital infrastructure, ICT technical support, board of management leadership and teacher-training act to empower the workforce towards successful implementation of Digital Literacy Programme.

## 2.8 Conceptual-framework

Figure 1 demonstrates linkage between institutional factors and implementation of DLP in primary-schools in this case – Mwea East Sub-County in Kirinyaga County, Kenya.

### Independent Variables

(Institutional-based factors)



### Moderating Variable

Figure 1 conceptualization of the variables of the research.

The outcome variable for the research was implementation of Digital Literacy Programme (DLP) and was perceived to be predicted by institutional factors namely: digital infrastructure, ICT technical support, board of management leadership and teacher-training. Implementation of Digital Literacy Programme was measured by the following indicators: meeting goals, teaching effectiveness, teaching innovativeness, teacher contentment, information and data literacy and digital content creation. Institutional factors are perceived to be constructed by the following four

predictor variables namely: digital infrastructure, ICT technical support, board of management leadership and teacher-training. Digital infrastructure was constructed by the following indicators: digital infrastructure, digital tools, digital learning materials and digital networks. ICT technical support is believed to contribute to the implementation of DLP and was measured by availability of technical support, client focus and client satisfaction. Also, board of management leadership predicted the implementation of DLP and was evaluated by communication, motivation and conflict resolution. Finally, teacher-training was evaluated by the training needs, type and content.

## **2.9 Summary of Literature Review**

Within this chapter, empirical literature was reviewed and presented per research themes: namely: implementation of Digital Literacy Programme, digital infrastructure and implementation of Digital Literacy Programme, ICT technical support and implementation of Digital Literacy Programme, board of management leadership and implementation of Digital Literacy Programmes, and teacher-training and implementation of Digital Literacy Programme. The conceptual-framework showing relationship linking organization factors and implementation of Digital Literacy Programme is also presented. Also discussed are the theoretical foundations namely: change theory and structural reinforcement theory. Also presented is a table of the gaps identified.

## 2.10 Summary of the Knowledge Gaps

The knowledge gaps that have been identified from empirical literature review are summarized in table 2.1.

**Table 2.1: The Summary of knowledge gaps some information in this page are outside the margins**

The table below presents a summary of identified knowledge gaps.

Variable	Authors	Area of Study	Method Used	Key -findings	Knowledge-Gaps	Emphasis of the study
<b>Digital Infrastructure and Implementation of Digital Literacy Programme</b>	Suryahadikusumah and Nadya (2020).	Exploration of the profile of digital literacy and it's relations to develop innovative guidance program in Indonesia	The survey research collected data from 45 school counselors youth and 52 structured questionnaires in descriptive statistics	Installation of appropriate hard and software promotes clarity of digital content and enhances innovation in communication and collaboration between learner and teacher	The study relied on descriptive statistics only thus limiting generation of more valid knowledge on the influence of digital resources on the programme implementation	Used inferential statistics to examine the influence of digital infrastructure on the implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya.
	Salim and Onjure (2020)	Influence of digital infrastructure on performance of digital literacy project in the public primary-schools in Nakuru County,Kenya.	Descriptive survey design, random sample of 246, structured questionnaires, correlational analysis	Digital infrastructure has statistically significance influence on performance of Digital Literacy Program (r=0.679; p<0.01).	Contextually, the study was limited to Nakuru County thus limiting the generalization of the findings	Examined the influence of digital infrastructure on the implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya.

<b>Variable</b>	<b>Authors</b>	<b>Area of Study</b>	<b>Method Used</b>	<b>Key -findings</b>	<b>Knowledge-Gaps</b>	<b>Emphasis of the study</b>
	Kardes (2020)	To assess implementation of Digital Literacy Programme in Turkey	The case study research design used qualitative research methods, data collected using semi-structured interview from 20 teachers selected using snowball sampling method and content analysis	Right digital materials and safe digital content contributes to the innovative development of the child and digital literacy education which in turn stimulates reliable digital transformation	The study was used non-probability sampling methods (snowball) which poses threat to representativeness of the data and potential threat to generalization of the findings	Used stratified random sampling so as to increased representativeness of the findings on the influence of digital infrastructure the implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya
<b>ICT Technical Support and Implementation of Digital Literacy Programme</b>	Skoda et al. (2020)	Exploration of role of informational support on implementation of digital literacy of adolescents in Spain	Survey research design, online questionnaire to gather data from 116 respondents, purposive sampling method, inferential and secretive statistics	Digital support helps demystify the curricula content thereby increasing the use of digital technologies by learners.	The study was limited to online questionnaire thus limiting the validity of the data generated	Used both structured questionnaire and unstructured interview guide to collect both qualitative and quantitative data for concluding the influence of I.C.T technical support on implementation of DLP in Kirinyaga County

<b>Variable</b>	<b>Authors</b>	<b>Area of Study</b>	<b>Method Used</b>	<b>Key -findings</b>	<b>Knowledge-Gaps</b>	<b>Emphasis of the study</b>
	Salim and Onjure (2020)	Influence of ICT Integration on performance of digital literacy project in the public primary-schools in Nakuru County, Kenya	Descriptive survey design, random sample of 246, structured questionnaires, correlational analysis	Limited technical support has negative effect on performance of Digital Literacy Program	Contextually, the study was limited to Nakuru County thus limiting the generalization of the findings	Established the influence of ICT technical support on implementation of Digital Literacy Programme in primary-schools on Mwea-East Sub-County in Kirinyaga County
	Eneizan et al. (2018)	Factors that are impacting upon the adoption of E-HRM in Jordan	Survey research design, 288 randomly sampled university employees, questionnaire, descriptive and inferential statistics	Technical assistance reinforces trust on perceived ease of use and usefulness e-HRM in universities	The study was limited to quantitative data gathered using questionnaire thus limiting content validity	Integrated both qualitative and quantitative data so as to strengthen the conclusion on the influence of ICT technical support on implementation of Digital Literacy Programme in primary-school institutions in Mwea-East Sub-County, Kirinyaga County, Kenya.

Variable	Authors	Area of Study	Method Used	Key -findings	Knowledge-Gaps	Emphasis of the study
<b>Board of management leadership and Implementation of Digital Literacy Programme</b>	Lastiningsih et al., (2019)	To determine the leadership and management design that is effective in implementing school literacy programme in Indonesia	Descriptive-explorative research, data collected using questionnaires and unstructured interview from a purpose sample 20 students and 5 teachers. Descriptive and inferential statistics	The best leadership and management design for effective implementation of Digital Literacy Programme is participatory	The study relied on a small sample size of 25 to conclude the findings. Correlational analysis requires over 104 sample size for conclusive findings	Used a large random sample of respondents so as to perform inferential statistics for concluding the influence of board of management leadership on implementation of Digital Literacy Programme in primary-schools in Kirinyaga County
	Androniceanua et al. (2015)	Leadership competencies for project based school-management success in Romania	Qualitative study utilizing questionnaires to collect data from convenient sample of 96 teacher, descriptive statistics	Effective leadership competencies are critical determinants for successful implementation of school projects.	The findings from the qualitative study could not be generalized due to lack external validity	Used probability sampling method so as to enhance conclusion on the influence of board of management leadership on implementation of DLP in Primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya.

Variable	Authors	Area of Study	Method Used	Key -findings	Knowledge-Gaps	Emphasis of the study
	Omony et al. (2018)	Project Leadership and Success of Public Infrastructural Megaprojects in Kenya	A cross-sectional census survey, random sample of 31 projects whereby data was collected from 195 employee, descriptive and inferential statistics	Leadership had a significant influence on the success of public infrastructural megaprojects	Leadership assessment was limited to success of project thus overriding the processes involved during execution of project	Assessed the influence of board of management leadership on implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya
<b>Teacher-training and Implementation of Digital Literacy Programme</b>	(Istikomah et al. 2020).	Evaluating the implementation of the literacy program in Indonesia	Descriptive qualitative study, purposeful sampling of 6 institutions, semi-structured interview, content analysis	Adequate facilities and infrastructure and competent teachers favoured digitization in schools	The study was limited to qualitative methodological approaches which pose biasness to the study thus lowering content validity	Used mixed methods so as to increase validity for concluding and generalizing the results on the influence of teacher-training on implementation of Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya.
	Malunda and Atwebembeire (2018)	Influence of training and instructional resources on teacher	Descriptive cross-sectional survey, questionnaire, interview,	Training, availability and utilization of instructional resources	The study could not be generalized to Kenyan schools due to different education systems	Examined influence of teacher-training on implementation of Digital Literacy Programme in

Variable	Authors	Area of Study	Method Used	Key -findings	Knowledge-Gaps	Emphasis of the study
		effectiveness in government-aided secondary schools in Uganda	observations, 82 randomly sampled head-teachers and 1,024 teachers, descriptive analysis, regression and content analysis	significantly contribute to teacher effectiveness in inferring knowledge to learners	between the two countries	primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya.
	Omito et al. (2019)	Influence of Teachers' computer skills on integration of laptop computers in public primary school institutions in Homa Bay County, Kenya	Cross-sectional survey, questionnaires and interview schedules, random sample of 362 teachers and 85 head-teachers in public primary-schools, content analysis, descriptive and inferential statistics	Teachers' with strong foundation in computer skills was a necessary condition for effective implementation of DLP in Kenya.	The study was limited to baseline evaluation to the implementation of DLP in Kenya. In addition, the research was limited to Homa-bay County	Examined influence of teacher-training on implementation of Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

Research methodology is presented in this chapter and covers research design, targeted population and sampling procedure and sample size, data collection and processing techniques, ethical considerations and operationalization of variables.

### **3.2 Research design**

Cross sectional approach in descriptive survey was adopted for the study. Cross sectional survey is a quantitative research design that collects data from a specific time and point so as to explain the occurrence a phenomenon as it naturally occurs (Creswel, 2014). Cross-sectional survey is not only cheap and quick to use but can also be used to assess numerous variables using single strand of data thereby providing adequate basis for exploring a phenomenon from multiple factors. However, cross-sectional survey is limited in that it cannot be used in cause-effect analysis of a situation. Also, unlike longitudinal survey which relies on trend data, cross sectional survey cannot be used to study behaviors over a period of time. The adoption of cross-sectional survey design was informed by the ease of use and efficiency which is associated with the design when more than two variables are involved. In past, cross-sectional survey has reliably been used in related studies (Omony et al., 2018; Malunda and Atwebembeire, 2018; Omito et al., 2019).

### **3.3 Target-Population**

The study targeted 30 head-teachers, 30 chairmen of board of management, 30 chairpersons of infrastructure sub-committees and 887 teachers from 30 public-primary-school institutions under the Sub-County of Mwea-East in the County of Kirinyaga in Kenya (Kirinyaga County Education Office, 2020).

### **3.4 Sample-Size and Sampling-Procedures**

The sample size of the study and the sampling procedure are discussed in this part.

#### **3.4.1 Sample Size**

A sample is a portion from a given population for investigation purpose and where the findings are generalized (Mohsin, 2016). The study used Krejcie-Morgan table of sample-determination (Bukhari, 2020) to select a sample size of 278 respondents. Table 3.1 summarizes the size of the sample.

**Table 3.1: Sample Size**

	<b>Head-teachers</b>	<b>Chairmen of board of management</b>	<b>Chairmen of infrastructure subcommittee</b>	<b>Teachers</b>	<b>Total</b>
<b>Target population</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>887</b>	<b>977</b>
<b>Sample Size</b> {nh = (Nh / N) * n }	{(30/977)x278}=9	{(30/977)x278}=9	{(30/977)x278}=9	{(887/977)x278}=251	<b>278</b>

The statistics in Table 3.1 depicts a sample size is 278 comprising of 9 head-teachers, 9 chairmen of board of management, 9 chairmen of infrastructure subcommittee and 251 teachers from the sub-county of Mwea-East public-primary-schools in Kirinyaga County, Kenya.

### 3.4.2 Sampling Procedure

Pooja (2019) describes sampling as a procedure to identify a sample from an extensive group of population. Sampling list for all public primary-schools and contacts of head-teachers and teachers was obtained from the Mwea-East Sub-County District Education Office. Samples was drawn using stratified and simple random sampling from a stratum whereby 9 head-teachers, 9 chairmen of board of management, 9 chairmen of infrastructure subcommittee and 251 teachers from public-primary-schools in Mwea-East in the County of Kirinyaga was picked. In each stratum, specific samples were chosen by first listing the names from the sampling list in alphabetical order in excel page. The next step was assigning of random numbers to each name and then sorting the random numbers in increasing order followed by selection of the first 9 cases for head-teachers, 9 chairmen of board of management, 9 chairmen of infrastructure subcommittee and 252 teachers. Table 3.2 summarizes sampling techniques.

### 3.5 Data Collection Instruments

Structured questionnaire and interview guides were administered to teachers and head-teachers from public-primary school institutions within Mwea-East in the County of Kirinyaga respectively. Likert-scale questionnaire with 5-point scale is considered to be effective when collecting quantitative data from public primary-school-teachers in Mwea-East in County of Kirinyaga. Rating scale of the questionnaire ranged from Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly Disagree (SD). The questionnaire was self-administered and had six sections namely: demographic profile of respondents, Implementation of Digital Literacy Programme (DLP), digital infrastructure and implementation of DLP, ICT

technical support and implementation of DLP, board of management leadership and implementation of DLP, teacher-training and implementation of DLP. Structured questionnaire has reliably been used in related studies with conclusive findings (Lastiningsih et al. 2019; Omony et al., 2018).

An interview guide was used to obtain confidential and privileged views, opinions and perceptions of head-teachers and chairmen of board of management and infrastructure subcommittee from the public primary-schools in Mwea-East in Kirinyaga, Kenya. The interview guide allowed for probing on how implementation of DLP was constructed by institutional factors. The interview guide was designed to cover three sections namely: overview, thematic areas and the summary of the interview. In past studies, unstructured interview guide has reliably been useful in obtaining qualitative data for valid conclusions (Lastiningsih et al., 2019; Istikomah et al., 2020).

### **3.5.1 Pilot Testing of Research Instruments**

Piloting of instruments was performed in Mwea West in Kirinyaga County using 28 respondents or 10% of the actual sample-size as recommended by Saunders (2007). Mwea West Sub-County has been chosen for pilot testing since it neighbors Mwea-East Sub-County and both Sub-Counties share same administrative characteristics in Kirinyaga County. The pilot study tested the feasibility and practicability in the use of the research tools.

### **3.5.2 Validity of Research Instruments**

Validity implies that the instruments can produce truthful data (Creswell, 2014). Validity of the data collection tools was enhanced by conducting a comprehensive literature review from past empirical studies to ensure that relevant indicators and items of each construct. Further, validity of the instruments was ensured by matching the indicators of each variable to the question design. This ensured that instrument items covered all the important dimensions of the construct in adequate manner. Moreover, the instruments were subjected to the supervisor`s review whose expertise input was used promote clarity, relevance and representativeness of items to ensure that they aligned with the research objectives. The study was grounded in well-established theories of change theory and empowerment theory which helped to support and align items with existing theoretical framework. Additionally, instruments were pilot-tested so as to identify any gaps with the items. This provided insights into the clarity and relevance of the items and enhanced validity.

### 3.5.3 Reliability of Research Instruments

Basically, reliability is the ability of an instrument to produce consistency and precision results when repeated (Creswell, 2014). Reliability was computed by means of split-half method whereby filled instruments was divided randomly into two halves. Thereafter, correlation analysis of data in the two halves was computed. The reliability was accepted at the widely accepted minimum level of 0.7 Cronbach's Alpha Coefficient for social sciences (Taber, 2017). Table 3.2 gives the results for the reliability test.

*Table 3.2: Results for the Reliability Test*

Experiment Variable	Cronbach's Coefficient ( $\alpha$ )
Digital infrastructure	0.81
ICT technical support	0.79
Board of management leadership	0.76
Teacher training	0.80

### 3.6 Data Collection Procedure

The primary source of information in the study was raw data. Before setting out to the field to collect data, letter of introduction was first obtained from the University and permit for the research from National Commission for Science Technology and Innovation (NACOSTI). The relevant authorities were informed regarding the study including the Mwea-East Sub-County Education Officer (MESEO). At MESEO office, list and contacts of head-teachers was obtained. The most convenient date for administering the interview and distributing questionnaires to teachers was agreed. The researcher administered the interviews and distributed questionnaires to the respondents. The most convenient dates for retrieving filled questionnaire were agreed. The completeness of the questionnaire was ascertained.

### 3.7 Data Analysis Techniques

Quantitative data were transferred to the Statistical-Packages for Social-Science Version 26 in order to produce inferential plus descriptive statistics namely: frequencies, percentages, mean and standard deviations. Pearson-Product-Moment-Correlation-Coefficient was used in testing relationship between variables. Narrative data was analyzed through coding, transcription and generation of themes and summaries.

### 3.8 Ethical Considerations

Ethics are core requirements for credible research outcomes. In order to promote quality data, the researcher fulfilled all administrative, legal, professional and ethical requirements through the research process. The rights and freedoms of the research subjects were safeguarded. The researcher adhered to the academic requirements and university guidelines, upheld the voluntary participation rule, confidentiality while respecting the rights of the participants.

### 3.9 Operationalization of Variables

The summarization of operationalization of research variables is as described in Table 3.3

**Table 3.3: Operationalization of variables**

Objective	Variable	Indicator	Measure	Measurement scale	Tools of analysis
Establish how digital infrastructure influences implementation of DLP in primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya	<b><u>Independent</u></b> Digital infrastructure	<ul style="list-style-type: none"> <li>• Digital tools</li> <li>• Digital learning materials</li> <li>• Digital networks</li> </ul>	Interval	Quantitative & qualitative	%, std. Dev, Frequency, mean, Pearson's correlation and content analysis
Examine how ICT technical support affects implementation of Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya.	<b><u>Independent</u></b> ICT-technical support	<ul style="list-style-type: none"> <li>• Availability</li> <li>• Teacher focus</li> <li>• Satisfaction</li> </ul>	Interval	Quantitative & qualitative	%, std. Dev, Frequency, mean, Pearson's correlation and content analysis
Determine how board of management leadership influences implementation of Digital Literacy Programme in primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya.	<b><u>Independent</u></b> Board of management leadership	<ul style="list-style-type: none"> <li>• Communication</li> <li>• Motivation levels</li> <li>• Conflict resolution</li> </ul>	Interval	Quantitative & qualitative	%, std. Dev, Frequency, mean, regression, Pearson's correlation and content analysis
Assess how teacher-training influences implementation of Digital Literacy Programme in primary-schools in	<b><u>Independent</u></b> Teacher-training	<ul style="list-style-type: none"> <li>• Training needs</li> <li>• Type of training</li> </ul>	Interval	Quantitative & qualitative	%, std. Dev, Frequency, mean, Pearson's

Objective	Variable	Indicator	Measure	Measurement scale	Tools of analysis
Mwea-East Sub-County in Kirinyaga County, Kenya		• Content of training			correlation and content analysis
	<b>Dependent</b> Implementation of Digital Literacy Programme	<ul style="list-style-type: none"> <li>• Meeting goals</li> <li>• Teaching effectiveness</li> <li>• Teaching innovativeness</li> <li>• Teacher contentment</li> <li>• Information and data literacy</li> <li>• Digital content creation</li> </ul>	Interval	Quantitative & qualitative	%, std. Dev, Frequency, mean, Pearson's correlation and content analysis

## CHAPTER FOUR:

### DATA ANALYSIS, PRESENTATION, INTERPRETATIONS AND DISCUSSIONS

#### 4.1 Introduction

The following are covered in the current chapter: analysis of data and presentation of findings. Additionally, the findings are interpreted upon which the findings are discussed per objectives

#### 4.2 Questionnaire Return Rate

278 structured questionnaires were given out of which 201 were duly filled and retrieved. Table 4.1 gives the summarized findings

*Table 4.1 Return-rate*

Questionnaire category	Frequency	(%)
Questionnaires-returned	201	72.3
Unreturned questionnaires	77	27.7
<b>Total</b>	<b>278</b>	<b>100.0</b>

The return rate for the questionnaire was 72.3%. Holtom, Baruch, Aguinis and Ballinger (2022) recommends for at least 68% return rate for conclusive findings of a scientific research. Therefore, the return rate of 72.3% for this study satisfied this condition. The high return rate was due to the easy design of the questions. The benefits of high return rate for the questions included higher level of data quality and accuracy. Out of the 27 sampled respondents for the interview, 15 (55.56%) answered to the interview questions.

#### 4.3 Background Features of the Respondents

Gender and age, education and experiences of the respondents are presented henceforth.

##### 4.3.1 Gender of the Respondents

The results on the gender representation are as summarized per Table 4.2.

**Table. 4.2 Gender of the respondents**

Gender	Frequency	percentage
Males	80	39.8
Females	121	60.2
<b>Total</b>	<b>201</b>	<b>100.0</b>

The data shown in 4.2 shows that 80 (39.8%) of the respondents were males and 121 (60.2%) of the respondents were females. Out the 15 respondents for the interview questions, 9 (60%) were males and 6 (40%) were females. Although gender was not a variable in this study, it was important to ensure that the sample reflected fair distribution of gender in order to reduce biasness and thus increase the validity for concluding and generalizing the study's findings

### 4.3.2 Age of the Respondents

The respondents` age group was analysed and summarized per Table 4.3

**Table 4.3 Age of the Respondents**

Age-group(years)	Frequency	Percentage
18-25	53	26.4
26-35	80	39.8
36-45	37	18.4
46-55	28	13.9
56-66	3	1.5
<b>Total</b>	<b>201</b>	<b>100.0</b>

The distribution of respondents by age declined in the following order: 26-35 years were 80 (39.8%), 18-25 years were 53(26.4%), 36-45 years were 37 (18.4%), 46-55 years were 28 (13.9%) and 56-66 years were 3 (1.5%). This finding is found in Table 4.2 under the category of age-group and implies that most of the respondents falls in the category of between 18-45 years (80.1%) which is generally argued to be digitally active portion of populations. This means that the respondents were better connected with the Digital Literacy Programme for informed responses. The ages of all the respondents for the interviews fell between 35 and 66 years.

### 4.3.3 Education level of the Respondents

The respondents` education levels were analysed and summarized per Table 4.4

**Table 4.4 Education level of Respondents**

<b>Education</b>	<b>Frequency</b>	<b>Percentage</b>
University degree	25	12.4
Diploma	109	54.2
College certificate	67	33.4
KCSE	0	0.0
KCPE	0	0.0
Below KCPE	0	0.0
<b>Total</b>	<b>63</b>	<b>100.0</b>

The data in Table 4.2 indicates that 25 or 12.4% of the respondents possessed university degree, 109 or 54.2% of the respondents had a diploma and the rest 67 (33.4%) of the respondents had a college certificate. It implied that all respondents had acquired a tertiary education. Education is important particularly to the respondents of a highly technical or Digital Literacy Programme because it provides basis for understanding the foundations of the programme and hence more valid responses. All the respondents for the key informant interview had at least acquired Kenya Certificate of Secondary Education Certificate, college, diplomate and degree certificates.

#### **4.3.4 Experiences of the Respondents in Implementing Digital Literacy Programme**

The findings on the experiences of the respondents are summarized per Table.4.5

**Table 4.5: Experiences Implementing Digital Literacy Programme**

<b>Experience with the project (years)</b>	<b>Frequency</b>	<b>Percentage (%)</b>
1	11	5.4
2	20	10.0
3	170	84.6
<b>Total</b>	<b>63</b>	<b>100.0</b>

The respondents' years of experience decreases as follows: 3 years (84.6%), 2 years 20 (10%) and 1 year 11 (5.4%). All the respondents for the interviews had at least 1-year experience in the implementation of Digital Literacy Programme in their respective schools. Experience was an important dimension of respondents because it reflects knowledge accumulated with on the

project execution. This in turn promotes understanding of the research questions in the project context.

#### 4.4 Implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya

Implementation of Digital Literacy Programme was the dependent variable whose indicators were: meeting goals, teaching effectiveness, teaching innovativeness, teacher satisfaction, information and data literacy and digital content creation. In their description of the implementation of Digital Literacy Programme, respondents rated ten items in a five-point scale and Table.4.6 summarizes the findings

**Table.4.6: Implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya**

	Strongly-disagree	Disagree	Neutral	Agree	Strongly-agree	n	Mean	Standard-deviation
The goals of Digital Literacy Programme were met	0(0.0%)	2(1.0%)	4(2.0%)	71(35.3%)	124(61.7%)	201	4.32	0.64
Through DLP, teaching was effective	0(0.0%)	5(2.5%)	12(6.0%)	108(53.7%)	76(37.8%)	201	4.27	0.68
DLP made teaching innovative	0(0.0%)	5(2.5%)	7(3.5%)	107(53.2%)	82(40.8%)	201	4.32	0.66
Teaching needs were met by DLP	0(0.0%)	5(2.5%)	12(6.0%)	108(53.7%)	76(37.8%)	201	4.27	0.68
DLP met teacher expectations	0(0.0%)	10(5.0%)	12(6.0%)	110(54.7%)	69(34.3%)	201	4.18	0.76
Teacher was satisfied with DLP	0(0.0%)	2(1.0%)	4(2.0%)	71(35.3%)	124(61.7%)	201	4.57	0.64
DLP made teacher-student interactive	2(1.0%)	10(5.0%)	11(5.5%)	124(61.7%)	54(26.9%)	201	4.08	0.78
Teacher understood the programme	3(1.5%)	1(0.5%)	6(3.0%)	113(56.2%)	78(38.8%)	201	4.30	0.69
Teacher can create digital content	0(0.0%)	5(2.5%)	7(3.5%)	107(53.2%)	82(40.8%)	201	4.32	0.66
Teaching was now effective	3(1.5%)	1(0.5%)	6(3.0%)	113(56.2%)	78(38.8%)	201	4.30	0.69
<b>Overall</b>						<b>201</b>	<b>4.29</b>	<b>0.69</b>

Table 4.6 demonstrates the overall mean as 4.29 hence respondents strongly agreed that implementation of Digital Literacy Programme (DLP) was effective. The overall standard

deviation was 0.69 which implied that there were minimal variations or outliers of scores about the mean thus enhancing consistency. The highest scoring statements were: teacher was satisfied with DLP (4.57, mean), the goals of DLP were met (4.32, mean) and DLP made teaching innovative (4.32, mean). Statements that scored lowest were: DLP made teacher-student interactive (4.08, mean), DLP met teacher expectations (4.18, mean) and DLP made teaching effective (4.27, mean). Thus, respondents (teachers) were satisfied by the implementation of the DLP.

This finding was supported by the narrative responses from the Head teacher, chairmen of boards and chairmen of infrastructural committees that the implementation of the DLP was effective despite frequent challenges that were common in all schools. For example, when asked to explain the effectiveness of the DLP, the summarized response was,

“The programme goals were achieved in satisfactory manner compared to other neighboring schools. There were evidences of better integration between teachers and learners due to the adoption of the opportunities provided by the programme. Teaching is now effective as evidenced by learner’s better performances. Teachers have become innovative in meeting learners` needs. By talking to the teachers, you can feel their satisfaction with the programme” (Key Informant Interviewees).

#### **4.5 Digital Infrastructure and Implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya**

Digital infrastructure was a predictor variable indicated by digital tools, digital learning materials and digital networks. Ten statements were subjected to the respondent and the results are summarized per Table.4.7.

**Table-4.7: Digital Infrastructure and Implementation of Digital Literacy Programme**

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	n	Mean	Standard-deviation
There were adequate laptops in the school	0(0.0%)	7(3.5%)	9(4.5%)	124(61.7%)	61(30.3%)	201	4.19	0.67
The school was installed with whiteboards	0(0.0%)	3(1.5%)	10(5.0%)	135(67.2%)	53(26.4%)	201	4.17	0.57
Internet was continuously available	0(0.0%)	2(1.0%)	11(5.4%)	134(66.7%)	54(26.9%)	201	4.18	0.59
The electricity power supply is steady	0(0.0%)	5(2.5%)	12(6.0%)	108(53.7%)	76(37.8%)	201	4.28	0.68
The digital learning materials were available	0(0.0%)	10(5.0%)	12(6.0%)	110(54.7%)	69(34.3%)	201	4.18	0.75
The digital learning materials were accessible	5(2.5%)	9(4.5%)	11(5.5%)	80(39.8%)	96(47.8%)	201	4.26	0.93
The digital learning materials were adequate	3(1.5%)	1(0.5%)	6(3.0%)	113(56.2%)	78(38.8%)	201	4.30	0.69
The digital learning content materials were relevant	0(0.0%)	5(2.5%)	7(3.5%)	107(53.2%)	82(40.8%)	201	4.32	0.66
The digital system was user friendly	0(0.0%)	5(2.5%)	12(6.0%)	108(53.7%)	76(37.8%)	201	4.27	0.68
The digital system was reliable	0(0.0%)	7(3.5%)	107(53.2%)	82(40.8%)	78(38.8%)	201	4.32	0.67
<b>Overall</b>						<b>201</b>	<b>4.25</b>	<b>0.69</b>

Table 4.7 shows the overall mean for digital infrastructure and implementation of Digital Literacy Programme 4.25 which implied that respondents were in strong agreement that digital infrastructure affected implementation of Digital Literacy Programme. For the overall standard deviation of 0.69, the scores about the mean were deemed stable hence consistency of data sets. The highest scoring statements were: the digital learning materials were adequate (4.30, mean), the digital learning content materials were relevant (4.32, mean) and the digital system was reliable (4.32, mean). The statements with lowest scores were: the school was installed with whiteboards (4.17, mean), internet was continuously available (4.18, mean) and the digital learning materials were available (4.18, mean).

The narrative data obtained from the school head teachers, Chairmen of the Board of Management and Chairmen of the Infrastructure Committees attributed the appropriateness of the digital infrastructure to the implementation of the Digital Literacy Programme. Nevertheless, the respondents cited delays and poor coordination in the delivery of the digital materials as the main challenges that slowed down the implementation of the project. The qualitative responses are summarized as follows,

“Indeed, the programme was well thought. Its implementation was a game changer in learning. Because technology is the backbone of knowledge management in modern times, it was essential to install the most appropriate and relevant digital resources in supporting learning. By doing so, teachers were enabled to access computerized devices, data, systems and processes in discharging their duties. As a result, dispensation of learning became easy. Nonetheless, installation of digital infrastructure was not sensitive to the school context. For instance, most of the devices required continuous electricity supply to work. Some schools were not yet connected to the grid. For network to be effective in supporting the learning, there was need for internet connectivity. But in some areas, internet was not intensive and continuous. The release of tablets and other digital devices was not timely as it appeared to face logistical and coordination challenges. In the future phases, there is need to integrate the users` needs in designing for future programmes. This can fasten user-technology integration process and hence smoother implementations” (Key Informant Interviewees).

### Hypothesis

The relation between digital infrastructure and implementation of Digital Literacy Programme was determined using Pearson`s correlational analysis method and the results are summarized per Table.4.8

**Table-4.8: Digital Infrastructure and Implementation of Digital Literacy Programme**

		<b>Implementation of Digital Literacy Programme</b>	
		Pearson`s-Correlation	1
		Signf.(for two -tailed)	
		n	201
<b>Digital Infrastructure</b>		Pearson`s-Correlation	0.71**
		Signf.(for two -tailed)	0.00
		n	201
			201

\*\* . Correlation was deemed significant at significant level of 0.05 for two-tailed).

Table 4.8 shows that the coefficient of correlation (r) between digital infrastructure and implementation of Digital Literacy Programme was 0.71 for the p value equals 0.00 which is

less than 0.05. This meant that digital infrastructure had strong positive relationship with implementation of Digital Literacy Programme. The null-hypothesis ( $H_{01}$ ) was hence rejected since prevailing evidence was strong to conclude that digital infrastructure has significant influence on the implementation of Digital Literacy Programme.

The main finding from this theme is that digital infrastructure contributed to the implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya. This finding is built on the evidence generate from both quantitative and qualitative data analyses. The finding is aligned to the findings in related studies by Suryahadikusumah and Nadya (2020), Salim and Onjure (2020) and Kardes (2020) that right and safe digital resources contributes to the innovative and reliable digital transformation in learning. In support, the change theory demystifies the adoption and transfer of digital technologies in institution learning by offering a simpler approach through which managers, leaders and project implementers can utilize to effect the digital integration. The structural empowerment theory offers theoretical framework arguing that appropriate digital infrastructure empowered schools to promoting learning.

#### **4.6 ICT Technical Support and Implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya**

ICT Technical Support was indicated by availability, teacher focus and contentment. Respondents answered ten statements and Table 4.9 summarizes the findings

**Table-4.9: ICT Technical Support and Implementation of Digital Literacy Programme**

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	n	Mean	Standard-deviation
The ICT technical support was always available	0(0.0%)	5(2.5%)	12(6.0%)	108(53.7%)	76(37.8%)	201	4.27	0.69
There were adequate ICT technical support services	3(1.5%)	1(0.5%)	7(3.5%)	109(54.2%)	81(40.3%)	201	4.31	0.70
The ICT technical support was reliable	4(2.0%)	15(7.5%)	20(10.0%)	106(52.7%)	56(27.9%)	201	3.97	0.93
Through ICT technical support, am able to solve learning challenges in class	2(1.0%)	10(5.0%)	11(5.5%)	124(61.7%)	54(26.9%)	201	4.08	0.78
The ICT technical support made it easier to use the digital tools	3(1.5%)	1(0.5%)	6(3.0%)	113(56.2%)	78(38.8%)	201	4.30	0.69
There were little cases of technical failure in digital learning	0(0.0%)	9(4.5%)	5(2.5%)	111(55.2%)	76(37.8%)	201	4.26	0.72
The technical support was client focused	0(0.5%)	5(2.5%)	5(2.5%)	105(52.2%)	86(42.8%)	201	4.35	0.66
Respondent was always contented by the ICT technical support services	0(0.0%)	5(2.5%)	7(3.5%)	104(51.7%)	85(42.3%)	201	4.34	0.68
Respondent was fully conversant with the ICT gadgets.	0(0.0%)	4(2.0%)	12(6.0%)	110(54.7%)	75(37.3%)	201	4.28	0.65
There was quick support by technicians	0(0.0%)	5(2.5%)	5(2.5%)	102(50.7%)	89(44.3%)	201	4.37	0.66
<b>Overall</b>						<b>201</b>	<b>4.25</b>	<b>0.76</b>

The finding in Table 4.9 shows that the overall mean for ICT Technical Support and implementation of Digital Literacy Programme 4.25 which implied that respondents were in strong agreement that ICT Technical Support affected implementation of Digital Literacy Programme. The overall mean standard deviation of 0.76 which implied that the scores about the mean were deemed stable hence consistency results. The statements which scored highest were: respondent was always contented by the ICT technical support services (4.34, mean), the technical support was client focused (4.35, mean) and there was quick support by technicians (4.37, mean). The following statements scored lowest: ICT technical support was reliable (3.97,

mean), Through ICT technical support, am able to solve learning challenges in class (4.08, mean) and there were little cases of technical failure in digital learning (4.26 mean).

When interviewed, the school head teachers, Chairmen of the Board of Management and Chairmen of the Infrastructure Committees associated ICT Technical Support with implementation of the Digital Literacy Programme. Specific attributes were laid to the better insights in understanding human-computer interphases. Also, the ICT technical support offered comprehensive tracking and preventions of potential problems. However, the support was not continuous and consistent which sometimes affected the utility of the devices. The summarized was,

“Being a new technology in learning, ICT technical support was vital not only in offering solutions to technical problems but also in running, protecting and maintaining the devices in action. Teachers required experts for continuous consultations when stack. Equally, ICT technical support offered the much needs support, diagnosis and solutions to conflicts between human-device usage. The gap between the user and the devices were solved by the ICT experts. The ICT experts guaranteed ensured that the devices were3 configured and programmes installed, training of the teachers, preventing data loss and security management. However, the technicians were not always available as they were being shared between different school. The scarcity of the ICT technical support and affected the school programmes negatively” (Key Informant Interviewees).

### Hypothesis

Pearson`s correlational analysis method was used to establish he relation between ICT Technical Support and implementation of Digital Literacy Programme and the results are summarized per Table.4.10

**Table.4.10: ICT Technical Support and Implementation of Digital Literacy Programme**

		Implementation of Digital Programme	of Literacy
	Pearson`s-Correlation	1	
	Signf.(for two -tailed)		
	n	201	
<b>ICT Support</b>	Pearson`s-Correlation	0.49**	
<b>Technical</b>	Signf.(for two -tailed)	0.00	
	n	201	201

\*\* . Correlation was deemed significant at significant level of 0.05 for two-tailed).

Table 4.10 shows that the coefficient of correlation ( $r$ ) between ICT Technical Support and implementation of Digital Literacy Programme was 0.49 for the  $p$  value equals 0.00 which is less than 0.05. This implied that ICT Technical Support had a moderate positive relationship with implementation of Digital Literacy Programme. Null-hypothesis ( $H_{02}$ ) was thus rejected since ICT Technical support was found to have significant influence on the implementation of Digital Literacy Programme.

The qualitative and quantitative findings show that ICT Technical Support contributed to the implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya. The finding is in line with empirical findings by Skoda et al. (2020), Salim and Onjure (2020) and Eneizan et al. (2018) that technical support in digital content is important as it demystifies the fear of change through facilitation, aid and that limited technical support has negative effect on performance of Digital Literacy Program. This is what theory of change terms as triggers to overcoming change resistance. When teachers are supported and facilitated through ICT technical services, they were able to develop positive attitude and embracing the implementation of the programme. The finding links well with structural empowerment theory which encourages organizations to build the capacity of workers in order to empower them in executing their tasks. This can be argued as the reason for the smooth implementation of the Digital Literacy Programme.

#### **4.7 Board of Management Leadership and Implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya**

Board of Management Leadership was indicated by communication, motivation and conflict resolution. There were ten statements describing this theme. The Table.4.11 summarizes the results

**Table-4.11: Board of Management Leadership and Implementation of Digital Literacy Programme**

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	n	Mean	Standard-deviation
Leadership motivated digital technology adoption	2(1.0%)	12(6.0%)	12(6.0%)	95(47.3%)	80(39.8%)	201	4.20	0.86
Leadership made communication effective	0(0.0%)	2(1.0%)	2(1.0%)	100(49.8%)	97(48.3%)	201	4.45	0.55
Technological issues were timely clarified	1(0.5%)	9(4.5%)	10(5.0%)	104(51.7%)	77(38.3%)	201	4.23	0.78
Conflicting issues were easily solved	0(0.0%)	5(2.5%)	9(4.5%)	111(55.2%)	76(37.8%)	201	4.28	0.65
Leadership offered clear sense of direction	0(0.0%)	4(2.0%)	4(2.0%)	103(51.2%)	90(44.8%)	201	4.39	0.63
Leadership facilitated linkages to support services	0(0.0%)	7(3.5%)	8(4.0%)	105(52.2%)	81(40.3%)	201	4.29	0.71
The leadership offered the necessary guidance	0(0.0%)	8(4.0%)	8(4.0%)	105(52.2%)	80(39.8%)	201	4.28	0.72
The leadership offered effective supervision	0(0.0%)	8(4.0%)	16(8.0%)	99(49.3%)	78(38.8%)	201	4.23	0.76
Leaders gave room for learning and improving	0(0.0%)	5(2.5%)	10(5.0%)	109(54.2%)	77(38.3%)	201	4.28	0.67
The leadership facilitated evaluation of digital tools.	0(0.0%)	2(1.0%)	7(3.5%)	108(53.7%)	84(41.8%)	201	4.36	0.60
<b>Overall</b>						<b>201</b>	<b>4.30</b>	<b>0.70</b>

Table-4.11 demonstrates the overall mean for Board of Management Leadership and implementation of Digital Literacy Programme as 4.30 which implied that respondents were in strong agreement that Board of Management Leadership affected implementation of Digital Literacy Programme. For the overall standard deviation of 0.70, the scores about the mean were deemed stable hence consistency of data sets. The highest scoring statements were: through leadership, communication was effective (4.45, mean), leadership offered clear sense of direction in the adoption of digital learning (4.39, mean) and the leadership facilitated evaluation of digital tools (4.36, mean). The statements with lowest scores were: the leadership motivated digital technology adoption by teacher (4.20, mean), technological issues were timely clarified (4.23, mean) and the leadership offered effective supervision (4.23, mean).

The finding from the qualitative responses from the key informants appeared to contradict the findings from the descriptive and inferential statistics. Whereas BOM leadership was found to have no significant influence on the implementation of the Digital Literacy Programme, the school head teachers, Chairmen of BOM and Infrastructural Committees associated leadership with positive influence on the implementation of the Digital Literacy Programme. The interviewees claimed that BOM leadership facilitated rather than executing the programme activities. The qualitative responses are summarized as follows,

“BOM leadership was necessary in the supervision of DLP programme. It was the duty of the BOM to lead in sensitizing the parents and the local communities on the objectives of the programme in order to gain understanding and support. The board was mandated to promote smooth implementation of the programme by ensuring that all the necessary support mechanisms were put into place. This was to be further enhanced through adequate planning and reviews. However, the board was not directly involved in the execution of the programme. These duties were delegated to the school head teacher. The board’s role was just but oversight.” (Key Informant Interviewees).

### Hypothesis

The relation between Board of Management Leadership and implementation of Digital Literacy Programme was determined using Pearson’s correlational analysis method and t Table.4.12 provides the summarized outcomes

**Table-4.12: Board of Management Leadership and Implementation of Digital Literacy Programme**

		<b>Implementation of Digital Literacy Programme</b>	
	Pearson`s-Correlation	1	
	Signf.(for two -tailed)		
	n	201	
<b>Board of Management Leadership</b>	Pearson`s-Correlation	-0.04	
	Signf.(for two -tailed)	0.54	
	n	201	201

\*\* . Correlation was deemed significant at significant level of 0.05 for two-tailed).

Table 4.12 shows that the coefficient of correlation (r) for Board of Management Leadership and implementation of Digital Literacy Programme was -0.04 for the p value equals 0.00 which is less than 0.05. This meant that Board of Management Leadership had no significant relationship with implementation of Digital Literacy Programme. Thus, null-hypothesis (H<sub>03</sub>)

was not rejected since there was strong evidence to support that Board of Management Leadership has no significant influence on the implementation of Digital Literacy Programme.

The main finding from this theme is that Board of Management Leadership has no significant contribution to the implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya. While this finding is partially inconsistent with the qualitative findings from the data collected using interviews, the role of BOM leadership was found to be peripheral in nature with no direct impacts on the way the DLP was executed. The finding is inconsistent with the findings from related studies done by Omonyo et al. (2018) that leadership had a significant influence on the success of public infrastructural megaprojects, Lastiningsih et al. (2019) that the best leadership and management design for effective implementation of digital literacy programme is participatory and Androniceanua et al. (2015) that Effective leadership competencies are critical determinants for successful implementation of school projects. The finding disapproves change theory that effective transitions requires conducive and supportive environment through effective leadership. The structural empowerment theory is also disapproved from the findings that BOM leadership do not contribute to the implementation of DLP yet empowerment is perceived as an enabler to smooth implementation of any tasks.

#### **4.8 Findings on Teacher Training and Implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County, Kenya**

Teacher training was a predictor variable indicated by training needs, training duration and content of training. Respondents answered ten statements and Table.4.13 summarizes the finding

**Table-4.13: Teacher training and Implementation of Digital Literacy Programme**

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	n	Mean	Standard-deviation
The digital training met teachers needs	2(1.0%)	12(6.0%)	12(6.0%)	95(47.3%)	80(39.8%)	201	4.19	0.87
The training content was relevant	0(0.0%)	2(1.0%)	2(1.0%)	100(49.8%)	97(48.3%)	201	4.45	0.57
The training offered practical skills for adoption of digital literacy	1(0.5%)	9(4.5%)	10(5.0%)	104(51.7%)	77(38.3%)	201	4.23	0.78
The training was done frequently	0(0.0%)	5(2.5%)	9(4.5%)	111(55.2%)	76(37.8%)	201	4.28	0.67
The training approach was learner centered	0(0.0%)	4(2.0%)	4(2.0%)	103(51.2%)	90(44.8%)	201	4.39	0.63
The training duration was adequate	0(0.0%)	7(3.5%)	8(4.0%)	105(52.2%)	81(40.8%)	201	4.29	0.70
Through training, teacher was able to solve learning issues	0(0.5%)	8(4.0%)	8(4.0%)	105(52.2%)	80(39.8%)	201	4.28	0.72
The training empowered teacher in driving the change required in digital learning	0(0.0%)	8(4.0%)	16(8.0%)	99(49.3%)	78(38.8%)	201	4.22	0.76
Training offered important knowledge in driving change in teaching	0(0.0%)	5(2.5%)	10(5.0%)	109(54.2%)	77(38.3%)	201	4.28	0.67
The training had a follow up on what was trained after its conclusion	0(0.0%)	2(1.0%)	7(3.5%)	108(53.7%)	89(41.8%)	201	4.36	0.60
<b>Overall</b>						<b>201</b>	<b>4.30</b>	<b>0.70</b>

The finding in Table 4.13 shows that the overall mean for Teacher training and implementation of Digital Literacy Programme 4.30 which implied that respondents were in strong agreement that Teacher training affected implementation of Digital Literacy Programme. The overall standard deviation of 0.70 which implied that scores about the mean were deemed stable hence consistency results. The statements which scored highest were: the training content was relevant (4.45, mean), the training approach was learner centered (4.39, mean) and the training had a follow up on what was trained after its (4.36, mean). The following statements scored lowest: the digital training met teachers` needs (4.39, mean), the training empowered teacher in driving the change required in digital learning (4.22, mean) and the training offered practical skills for adoption of digital literacy (4.23, mean).

The qualitative findings from the analysis of the responses from the school head teachers, Chairmen of the Board of Management and Chairmen of the Infrastructure Committees attributed teacher training to the main reason for the achievements in the implementation of the Digital Literacy Programme in their schools. The interviewees considered training as an empowerment to the primary user of the digital literacy programme. The empowerment was perceived as the exceptional intervention that not only facilitated understanding and the adoption of digital learning technology but also demystified the fear of change amongst the teachers. By doing so, the teachers were able to gain knowledge, change attitude and perceptions and hence embrace the implementation of the digital learning technology. The summarized is,

“Training of teachers was very important step in the integration of digital learning to the existing analogue approaches. Teachers had to understand the basic concepts and definitions of the contents and also how to operate the devices. Such steps were very useful in fighting change resistance. It also helped to promote ownership among the teachers. As you are aware, teachers were the main users of the Digital Learning Programme. Therefore, isolating and failing to empower them would have been catastrophic to the implementation of the programme. It is the teacher who directly connects with the learner. This fact was candidly take into consideration during the design and implementation of the programme and hence the present achievements” (Key Informant Interviewees).

### Hypothesis

Pearson`s correlational analysis method was used to establish he relation between teacher training and implementation of Digital Literacy Programme and Table 4.14 gives the summarized findings

**Table-4.14: Teacher Training and Implementation of Digital Literacy Programme**

		Implementation of Digital Literacy Programme
	Pearson`s-Correlation	1
	Signf.(for two -tailed)	
	n	201
<b>Teacher Training</b>	Pearson`s-Correlation	0.88**
	Signf.(for two -tailed)	0.00
	n	201
		201

\*\* . Correlation was deemed significant at significant level of 0.05 for two-tailed).

Table 4.14 shows that the coefficient of correlation (r) between teacher training and implementation of Digital Literacy Programme was 0.49 for the p value equals 0.00 which is

less than 0.05. This implied that Teacher training had a very-strong-positive-relationship with implementation of Digital Literacy Programme. Thus, null-hypothesis ( $H_{04}$ ) was rejected and the alternate hypothesis that teacher training has significant influence on implementation of Digital Literacy Programme was upheld

The qualitative and quantitative findings revealed that that teacher training was strongly associated with implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County Kenya. The finding is in line with empirical findings by Istikomah et al. (2020) that adequate facilities and infrastructure and competent teachers favored digitization in schools. The finding is further inherent with the findings from an empirical study by Malunda and Atwebembeire (2018) that training, availability and utilization of instructional resources significantly contribute to teacher effectiveness in inferring knowledge to learners. Further, Omito et al. (2019) strongly attribute teachers' in computer skills with effective implementation of DLP in Kenya. Training of teachers was helpful in breaking the attitudes of change resistance. This finding is supported by change theory in that for change to effective in organization, there is need to install change agents. In this particular finding, training of trainers is perceived as an excellent change agent. The structural empowerment theory supports the finding that a trained teacher is an empowered agent for effective adoption and adaptation to new technology. Training builds the capacity of the teacher in overcoming implementation challenges leading to innovation in solving implementation problems.

#### **4.9 Institutional Factors and Implementation of Digital Literacy Programme in Primary-schools in Mwea-East Sub-County in Kirinyaga County**

The institutional factors were perceived as digital infrastructure, ICT technical support, BOM leadership and teacher training. The linear relationships between institutional factors and implementation of Digital Literacy Programme were computed using Pearson's Product Moment Correlation analysis. The findings are given in Table 4.15.

**Table 4.15: Correlation between Institutional Factors and Implementation of Digital Literacy Programme**

		Implementation of DLP	Digital infrastructure	ICT technical support	BOM leadership	Teacher training
Implementation of Digital Literacy Programme	Pearson`s-Correlation Signf.(for two -tailed) n	1 201				
Digital infrastructure	Pearson`s-Correlation Signf.(for two -tailed) n	0.71** 0.00 201	1 201			
ICT technical support	Pearson`s-Correlation Signf.(for two -tailed) n	0.49** 0.00 201	0.37** 0.00 201	1 201		
BOM leadership	Pearson`s-Correlation Signf.(for two -tailed) n	-0.04 0.53 201	-0.03 0.66 201	-0.14* 0.04 201	1 201	
Teacher training	Pearson`s-Correlation Signf.(for two -tailed) n	0.88** 0.00 201	0.82** 0.00 201	0.52** 0.00 201	-0.01 0.90 201	1 201

The findings given in Table 4.16 shows that the strength of the relationship between Institutional Factors and implementation of Digital Literacy Programme in Mwea-East Sub-County in Kirinyaga County decreased in the following order: teacher training ( $r=0.88$ ), digital infrastructure ( $r=0.71$ ), ICT technical support ( $r=0.49$ ) and BOM leadership ( $r=-0.04$ ). This finding is inherent with the empirical establishments from the past studies including the one done by Salim and Onjure (2020) exploring the link between digital infrastructure and performance of digital literacy project in the public primary-schools in Nakuru County that digital infrastructure has statistically significant influence on performance of Digital Literacy Program. Similar findings are traced in the research by Omonyo et al. (2018) that success of public digital infrastructural is dependent on the capacities to install and coordinate the implementation process. Still, the findings are supported by the study findings by Omito et al. (2019) focusing on how teachers' computer skills influenced the integration of laptop computers in public primary school institutions in HomaBay County whereby teachers' with

strong foundation in computer skills was found to be a necessary condition for effective implementation of DLP in Kenya. It implied that institutional-based factors (teacher training digital infrastructure, ICT technical support and BOM leadership are critical shapers of the context in which DLP programs are carried out. These factors can either facilitate or hinder the successful implementation of digital literacy initiatives.

## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1. Introduction

The main findings after data analysis summarized and conclusions and the suitable recommendations made. Finally, the possible study areas are highlighted.

#### 5.2 Summary of Findings

The summary of the findings is guided by the objectives for the study.

##### 5.2.1 Influence of Digital Infrastructure on Implementation of Digital Literacy Programme in Mwea-East Sub-County in Kirinyaga County, Kenya

Both descriptive and correlational findings showed that digital infrastructure contributed to the Implementation of Digital Literacy Programme. For instance, the overall mean for digital infrastructure and implementation of Digital Literacy Programme was 4.25 which implied that respondents were in strong agreement that digital infrastructure affected implementation of Digital Literacy Programme. The Pearson's correlation coefficient ( $r$ ) was 0.71 implying that Digital Infrastructure strongly and positively related with the Implementation of Digital Literacy Programme. Thus, the null-hypothesis was rejected because the prevailing evidence showed that Digital Infrastructure had a significant influence on the Implementation of Digital Literacy Programme

##### 5.2.2 Influence of ICT Technical Support and Implementation of Digital Literacy Programme in Mwea-East Sub-County in Kirinyaga County, Kenya.

The findings from descriptive statistics showed that the overall mean for ICT Technical Support and implementation of Digital Literacy Programme was 4.25 which implied that respondents were in strong agreement that ICT Technical Support affected implementation of Digital Literacy Programme. The quantitative data analysis revealed that ICT Technical Support was essential to successful implementation of Digital Literacy Programme. The relationship between ICT Technical Support and Implementation of Digital Literacy Programme was moderate positive for  $r=0.49$ . Therefore, the null hypothesis was rejected and concluded that ICT Technical Support was a significant influencer of Implementation of Digital Literacy Programme.

### **5.2.3 Influence of BOM Leadership on Implementation of Digital Literacy Programme in Mwea-East Sub-County in Kirinyaga County, Kenya**

The findings from the descriptive statistics showed that overall mean for Board of Management Leadership and implementation of Digital Literacy Programme was 4.30 which implied that respondents were in strong agreement that Board of Management Leadership affected implementation of Digital Literacy Programme. The correlational results showed that BOM Leadership was not an influencing factor to implementation of Digital Literacy Programme. The Pearson's-correlation coefficient was  $r=-0.04$  implying that BOM Leadership had a very weak negative relationship with the Implementation of Digital Literacy Programme. Thus, null-hypothesis was not rejected because the prevailing evidence showed that BOM leadership had no significant influence on the Implementation of Digital Literacy Programme

### **5.2.4 Influence of Teacher Training on Implementation of Digital Literacy Programme in Mwea-East Sub-County in Kirinyaga County, Kenya.**

The findings from the descriptive statistics showed the overall mean for teacher training and implementation of Digital Literacy Programme was 4.30 which implied that respondents were in strong agreement that Teacher training affected implementation of Digital Literacy Programme. The relationship between Teacher Training and Implementation of Digital Literacy Programme was very strong positive for  $r=0.88$ . Null hypothesis was rejected and concluded that Teacher Training was a significant influencer of Implementation of Digital Literacy Programme.

## **5.3 Conclusions from the Findings**

The first objective determined how strategic Digital Infrastructure influenced Implementation of Digital Literacy Programme in Mwea-East Sub-County in Kirinyaga County, Kenya. The quantitative and qualitative findings lead to the conclusion that Digital Infrastructure is an important institutional factor for effective Implementation of Digital Literacy Programme.

Objective two assessed the influence of ICT Technical Support on Implementation of Digital Literacy Programme in Mwea-East Sub-County in Kirinyaga County. The findings from descriptive and inferential analysis builds the necessary evidence to conclude that ICT Technical Support has significant influence on the Implementation of Digital Literacy Programme.

In the third objective, influence of BOM Leadership on Implementation of Digital Literacy Programme in Mwea-East Sub-County in Kirinyaga County was examined. But according to the inferential statistics, BOM Leadership was found to have no significant influence on the Implementation of Digital Literacy Programme. Therefore, BOM Leadership is not an essential institutional factor for the Implementation of Digital Literacy Programme.

The fourth objective examined the influence of Teacher Training on Implementation of Digital Literacy Programme in Mwea-East Sub-County in Kirinyaga County. The results from both descriptive, correlational and inferential analysis lead to the conclusion that Teacher Training was the greatest institutional factor to consider during Implementation of Digital Literacy Programme.

#### **5.4 Recommendations from the Findings**

Based on the findings and the conclusions, the following recommendations are given.

##### **5.4.1 Recommendation for the Practice of Project Management**

The revelation that Digital Infrastructure, ICT Technical Support and Teacher Training have significant influence on Implementation of Digital Literacy Programme should provoke project managers involved in planning for highly technical projects interventions seek to provide practical interventions in addressing the problem. In addition, project managers should use their soft-project management skills like leadership based on situation because the finding from this study found no connection between BOM Leadership and Implementation of Digital Literacy Programme.

##### **5.4.2 Recommendation for Policy**

The Government of Kenya is recommended to use the findings that Digital Infrastructure and ICT Technical Support to institute appropriate requirements that strengthen integration of technological and technical Implementation of future Digital Literacy Programmes. Additionally, Government can make it mandatory for training of the users of highly technical projects for smooth integration. This recommendation is based on the finding that teacher training had the greatest influence on the Implementation of Digital Literacy Programme. Finally, the government can develop leadership training modules for project managers to

ensure that they are better equipped with the soft and people management skills for effective implementation of projects.

#### **5.4.3 Recommendation for Methodology**

In this study, factor analysis of each indicator relative to the Implementation of Digital Literacy Programme was ignored. This provides a methodological gap for future researches to explore. Future methodologies may adopt mixed methodologies so as to triangulate multiple means of data collection and analysis so as to obtain more generalizable results. The scope of the present study was constrained to implementation of DLP in Mwea-East Sub-County in Kirinyaga County. Future methodologies need to expand the scope and methodologies for greater comparisons between the phenomenon among different counties.

#### **5.5 Suggestions for Further Study**

Areas for future researches are:

- i. Moderation of BOM leadership on implementation of Digital Literacy Programme
- ii. Influence of Head teachers` leadership style on implementation of Digital Literacy Programme
- iii. Teachers` capacity and adoption of digital learning technologies.

## REFERENCES

- Alshammari, S. H. (2020). The influence of technical support, perceived self-efficacy, and instructional design on students' use of learning management systems. *Turkish Online Journal of Distance Education*, 21 (3) 9, 112-141.
- Androniceanua, A., Ristea, B. & Udaa, M. M. (2015). Leadership competencies for project based school management success. *Procedia - Social and Behavioral Sciences*, 182 (15)232-238
- Atenas, J. & Havemann, L. (2013). Quality Assurance in the Open: An Evaluation of OER Repositories. *The International Journal for Innovation and Quality in Learning*, 1(2), 22-34. Retrieved from <http://papers.efquel.org/index.php/innoqual/article/view/30/12>.
- Baleghi-Zadeh, S., Ayub, A. F. M., Mahmud, R., & Daud, S. M. (2017). The influence of system interactivity and technical support on learning management system utilization. *Knowledge Management & E-Learning: An International Journal (KM&EL)*, 9(1), 50-68
- Baston, V. (2004). Shared governance in an integrated health care network. *AORN*, 80(3), 493-496, 498, 501-504, 506, 509-512.
- Best, J. W. & Kahn, J. (2009). *Research in education*, New Delhi & Prentice Hall of India.
- Blaskovics, B. (2019). *Project management tools in virtual environment*. In: Kőszegi, I. R. (ed.): III. Gazdálkodás és Menedzsment Tudományos Konferencia: Versenyképesség és innováció. Kecskemét: Neumann János Egyetem, pp. 926–932
- Braskovics, B., Deak, C. & Varga, A. K. (2019). *Chapters from the Academic Aspect of Project Management - Research and Teaching Methodologies Volume III*. PMUni- International Network for Professional Education and Research in Process and Project Management
- Brites, M. J. (2020). Digital and school journalism approaches at school, *Icono 14*, 18 (2), 35-57. doi: 10.7195/ri14.v18i2.1579
- Britt, A.M., Rouet, J.-F. & Durik, A.M. (2017). *Literacy beyond text comprehension: A theory of purposeful reading*. New York, NY: Routledge.
- Bukhari, S. A. R. (2020). "Bukhari Sample Size Calculator". *Research Gate GmbH*. DOI: 10.13140/RG.2.2.27730.58563
- Cash, H. & Fox, R. (2012). Elements of successful project management. *Systems Management* (1992) 10-12.
- Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods approaches (4th ed.)*. Thousand Oaks: SAGE Publications. ISBN 978-1-4522-2609-5
- Degner, L. (2005). Knowledge translation in palliative care: Can theory help? *Canadian Journal of Nursing Research*, 37(2), 105-113.
- Donohue, C. (2014). Technology and digital media as tools for teaching and learning in the digital age. In *Technology and Digital Media in the Early Years* (pp. 53-67). Routledge.

- Eneizan, B., Mostafa., A. A. N & Alabboodi, A. S. (2018). Effect of technical support and trust on the adoption of electronic human resource management: Evidence from developing countries. *International Journal of Applied Research*, 4(7): 31-40
- Gillen, J., Arnott, L., Marsh, J., Bus, A., Castro, T., Dardanou, M., & Holloway, D. (2018). *Digital Literacy and young children: towards better understandings of the benefits and challenges of digital technologies in homes and early years' settings*. Policy briefing of DigiLitEY COST Action IS1410 and the Digital Childhoods SIG of the European Early Childhood Research Association.
- Gioko, M. & Kadzo, L. (2018). *Curriculum development for embedding digital literacy om Kenyan Schools*, in Conference Proceeding Open Conference on Computers in Education OCCE 2018, Linz, Austria, 2018.
- Government of Kenya (2005). *Sessional Paper 1, 2005 on Policy Education Framework for Education Training and Research*, Government Printer.
- Government of Kenya (2007). *National Information, Communications and Technology (ICT) Strategy for Education and Training*, Government Printer.
- Government of Kenya (2016). *Digital Literacy Programme Management Guidelines*. Government Printer.
- Government of Kenya (2018). *National Education Sector Strategic Plan (2018-2022)*. Government Printer.
- Government of Kenya (2019). *National Information, Communications and Technology (ICT) policy*, Government Printer Government of Kenya (2019). *National Information, Communications and Technology (ICT) policy*, Government Printer.
- Gudono (2016). *Teori Organisasi*. BPFE, Yogyakarta.
- Heitin, L. (2016). Digital Literacy: An Evolving Definition, *Education Week*, Vol. 36, Issue 12, Pages 5-6
- Holtom, B. Baruch, Y, Aguinis, H. & Ballinger, G. A. (2022). Survey response rates: Trends and a validity assessment framework, *Human relations* 00(0), 1-25
- Istikomah., Kristiawan, M., Wardiah, D. (2020). An Evaluation of Literacy Program, For Improving Students' Achievement, *International Journal of Progressive Sciences and Technologies (IJPS)*. 20 (1) 26-32, <http://ijpsat.ijsh-t-journals.org>
- Kapur, R. (2019). *Understanding Meaning and Significance of Computer Literacy Programs*.
- Kardes. S. (2020). Digital literacy in early childhood, *Inonu University Journal of the Faculty of Education*, 21(2), 827-839. DOI: 10.17679/inuefd.665327.
- Karkara, N. (2013). *Advocating for Evaluation. A toolkit to develop advocacy strategies to strengthen an enabling environment for evaluation*, pp. 14 – 16.

- Katona, V. (2019): Role and Positioning of Reward Based Crowdfunding in the Funding of Technological Innovation Projects View- point of Entrepreneurial Financing Experts. *Vezetéstudomány*, 50(5), 13-24
- Kerzner, H. (2009). *Project management. A systems approach to planning, scheduling, and controlling*. Van Nostrand Reinhold, New York.
- Kingori, G., Njiraine, D., & Maina, S. (2016). Implementation of information literacy programmes in public libraries. *Library Hi Tech News*, 33(2), 17-22, <https://doi.org/10.1108/LHTN-09-2015-0063>.
- Larkin, M., Cierpial, C., Stack, J., Morrison, V., Griffith, C., (2008). Empowerment Theory in Action: The Wisdom of Collaborative Governance, *The Online Journal of Issues in Nursing*. 13 (2)
- Lastiningsih, N., Riyanto, Y., Mutohir, T. C., Karwanto, Mudjito, Hartono, S. (2019). Design of Management on School Literacy Program: A Perspective from Indonesian School. *Universal Journal of Educational Research* 7(12): 2765-2772.
- Leach, V., Tonkin, E., Lancaster, D., Kirk, M. (2016). A strategy for implementing genomics into nursing practice informed by three behaviour change theories. *International Journal Of Nursing Practice*, 22(3), 307-315
- Leedy, P. D. & Ormrod, J. E. (2010) *Practical research: planning and design*, 9<sup>th</sup> Edition. NYC:
- Maina, G. & Waga, R. (2020). *Digital Literacy Enhancement Status in Kenya's competency-based curriculum*.
- Malunda, P. N. & Atwebembeire, J. (2018). *Instructional Resources and Teacher Effectiveness in Government-aided Secondary Schools in Uganda*. International Conference on Multidisciplinary Research Track 4: Education held in Port Louis in Mauritius
- Meredith, J. R & Mantel, S. J. (2009). *Project Management, a Managerial Approach*. 7<sup>th</sup> Edition, Washington D.C USA, John Wiley & Sons, Inc.
- Milena, M. V. & Sladana, T. V. (2019). *The importance of teacher's digital literacy*; CMP 415-426.
- Mugo, R. (2017). *Digital Literacy Programme for Schools – Use of ICTs to Enhance Learning Kenya Primary-schools Heads*. ICT Authority.
- Muraya, J. (2017). *Secret behind Kirinyaga County's Education Excellence*. Capital News.
- Murry, J. (2015). *Technology in the Classroom: What is Digital Literacy?* (Available at <http://www.teachhub.com/technology-classroom-what-digital-literacy>).
- Mwaniki, J. R. and Mugambi, M. M. (2017). Influence of health information system (HIS) on service delivery in public health facilities in Kenya: A case of Imenti North Sub-County, Meru County. *International Academic Journal of Information Sciences and Project Management*, 2(1), 239-258

- Nashihuddin, W. (2018). *Librarian efforts in supporting movement of the digital literacy and scientific literacy in Indonesia*. Presentation paper of 17th CONSAL “Next Generation Libraries: Collaborate and Connect”, 2 – 5 May 2018, NayPyiTaw - Myanma
- Nesbit, T. R. (2019). Adopting Technology App in the classroom- The case of Technical Support. *Conwy 2-0184*, Ara Institute of Canterbury, Christchurch, New Zealand.
- Omito, O., Kembo, J., Ayere, M. & Ali, A. A. (2019). Teachers’ Computer Capacity in Public Primary-schools in Homa Bay County, Kenya: The Case of the Digital Literacy Programme. *European Scientific Journal*.Vol.15, No.19.
- Omony, A. B., Gakure, R. & Odhiambo, R. (2018). Influence of Project Leadership on Success of Public Infrastructural Megaprojects in Kenya. *International Journal of Management Sciences and Business Research*, 7 (3) 27-42.
- Omony, A. Gakure, R. & Odhiam, R. (2018). Influence of Project Leadership on Success of Public Infrastructural Megaprojects in Kenya. *International Journal of Management Sciences and Business Research*, 7 (3), 27-42.
- Orr, P., Davenport, D. (2015). Embracing change. *The Nursing Clinics Of North America*, 50(1), 1-18
- Petitjean, M. (2017): *What explains the success of reward-based crowdfunding campaigns as they unfold?* Evidence from the French crowdfunding platform KissKissBankBank. Finance Research Letters.
- Project Management Institute. (PMI, 2017). *A Guide to the Project Management Body of Knowledge (PMBOK Guide)*, Sixth Edition. Newtown Square, PA
- Saunders, N. M. (2007). *Research methods for business students*, 5/e. Pearson Education
- Salim, C. I. & Onjure, C. O. (2020). Influence of ICT Integration on Performance of Digital Literacy Project in the Public Primary-schools in Nakuru County, Kenya. *International Management Journal*, 8 (5), 134-149. <http://dx.doi.org/10.24940/theijbm%2F2020%2Fv8%2Fi5%2FBM2005-008>
- San Cristóbal, J. R., Carral, L., Diaz, E., Fraguera, J. A., & Iglesias, G. (2018). *Complexity and Project Management: A General Overview*. Complexity,2018,1-10.
- Santos, Ana Isabel and Serpa, Sandro (2017). The Importance of Promoting Digital Literacy in Higher Education, *International Journal of Social Science Studies*, 5 (6) (URL: <https://doi.org/10.11114/ijsss.v5i6.2330>)
- Sieberhagen, E. & Cloete, L. (2012). The evaluation of a digital information literacy program. *SA Jnl Libs & Info Sci 2012, Special Issue*.
- Skoda, J. Luic, L. & Brlek, E. (2020). *Informational aspects of digital literacy*, Proceedings of EDULEARN20 Conference 6th-7th July 2020, IATED Academy Spain.
- Suryahadikusumah, A. R. & Nadya, A. (2020). *Digital Literacy and Innovation for Guidance and Counseling Program*. Proceedings of the 2nd International Seminar on Guidance and

- Syamalamba, R. (2011). Information Literacy Programs for Undergraduate Students. *International Journal of Digital Library Services*, 1(1), 49-90. Retrieved November 14, 2019 from [http://www.ijodls.in/uploads/3/6/0/3/3603729/vol1\\_issue1part-2.pdf](http://www.ijodls.in/uploads/3/6/0/3/3603729/vol1_issue1part-2.pdf).
- Taber, K. S. (2017). The use of Cronbach`s Alpha when developing and reporting research instruments in science education. *Res Sci Educ* 48 (2018), 1273-1296
- Tarus, J. K., Githioya, G. & Muumbo, A. (2015). Challenges of Implementing E-Learning in Kenya: A Case of Kenyan Public Universities. *International Review of Research in Open and Distributed Learning* 6 (1), 120-141. <https://DOI: 10.19173/irrodl.v16i1.1816>
- Tekale, R. B. (2018). Digital Literacy. *The South Asian Academic Research Chronicle ISSN 2454 – 1109*
- Wanjala, M. S., Khaemba, E. N. & Mukwa, C. (2011). Significant factors in professional staff development for the implementation of ict education in secondary schools: A case of schools in Bungoma District, Kenya. *International Journal of Curriculum and Instruction*, 1(1), pp. 30-42, April 2011.
- Zandhuis, A., & Wuttke, T. (2019). *A pocket companion to PMIs PMBOK® guide: a quick introduction to A guide to the project management body of knowledge (PMBOK® Guide) sixth edition*. s-Hertogenbosch: Van Haren Publishing.

## APPENDICES

### Appendices I: Letter of Transmittal of Instruments

**Rutere Denis Murithi**

**Private-Bag**

**Kutus**

**Date: 3/3/2022**

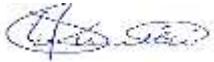
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#### **DATA COLLECTION PARTICIPANT**

As a researcher-student associated with the Nairobi University, am performing a research with the title *“Influence of Institutional Factors on Implementation of Digital Literacy Programme in primary School institutions in Mwea-East in Kirinyaga County Kenya”*. Having been identified as a useful respondent, the information to be given will embolden the findings and recommendations towards greater implementation of the Digital Literacy Programmes.

Your acceptance is welcome.

Yours sincerely,



**Rutere Denis Murithi**

## Appendices II: Questionnaire for Teachers

The study aims to evaluate how *Institutional factors affecting execution of Digital Literacy Programme in primary-schools in Mwea-East in Kirinyaga County Kenya*". Kindly, answer objectively to the enlisted questions by ticking in the boxes give.

### RESPONDENT`S PROFILE

#### 1: Gender

(a.): Male [ ]

(b.): Female [ ]

#### 2: Age - group

a): 18. and 25 YRS [ ]

b): 26. and 35 YRS [ ]

c): 36. and 45 YRS [ ]

d): 46. and 55 YRS [ ]

e): 56. and 65 YRS [ ]

#### 3: Highest Education Level

(a) Degree: [ ]

(d) KCSE: [ ]

(b) Diploma: [ ]

(e) KCPE: [ ]

(c) Certificate: [ ]

(f) Below KCPE: [ ]

#### 4. How long have implemented Digital Literacy Programme in this institution?

a) ONE YR [ ]

b) TWO YEARS [ ]

c)THREE YEARS [ ]

## IMPLEMENTATION OF DIGITAL LITERACY PROGRAMME

Rate your agreement-level whereby **1** stands for Strongly Disagree- SD, **2** stands for Disagree-D, **3** stands for Neither-Agree nor Disagree -N, **4** stands for Agree - A and **5** stands for Strongly Agree-SA.

<b>Implementation of the Digital Literacy Programme</b>						
	<b>Aspects of implementation of Digital Literacy Programme (DLP)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
a.	The goals of Digital Literacy Programme were met					
b.	Through DLP, teaching has become effective					
c.	Through DLP, teacher is innovative in teaching					
d.	Teaching needs were met by DLP					
e.	DLP met teacher expectations					
f.	Teacher is satisfied with DLP					
g.	Through DLP, teacher-student interaction is now easier					
h.	Teacher is nor data and information literate					
i.	Teacher can create digital content					
j.	Teaching is now effective					

## DIGITAL INFRASTRUCTURE

<b>Digital Infrastructure and Implementation of DLP</b>						
	<b>Digital Infrastructure and Implementation of DLP</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
a.	There are adequate laptops in the school					
b.	The school is installed with whiteboards					
c.	Internet is continuously available					
d.	The electricity power supply is steady					
e.	The digital learning materials are available					
f.	The digital learning materials are accessible					
g.	The digital learning materials are adequate					
h.	The digital learning content materials are relevant					

i.	The digital system is user friendly					
j.	The digital system is reliable					

### ICT TECHNICAL SUPPORT

<b>ICT Technical Support and Implementation of DLP</b>						
	<b>ICT Technical Support and Implementation of DLP</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
a.	The ICT technical support is always available					
b.	There are adequate ICT technical support services					
c.	The ICT technical support is reliable					
d.	Through ICT technical support, am able to solve learning challenges in class					
e.	The ICT technical support has made it easier to use the digital tools					
f.	There are little cases of technical failure in digital learning					
g.	The technical support is client focused					
h.	I am always contented by the ICT technical support services					
i.	I am fully conversant with the ICT gadgets.					
j.	There is quick support by technicians when needed					

### BOARD OF MANAGEMENT LEADERSHIP

<b>Board of management leadership and Implementation of DLP</b>						
	<b>Board of management leadership and Implementation of DLP</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
a.	The board of management leadership motivates digital technology adoption by teacher					
b.	Through leadership, communication was effective					
c.	Technological issues were timely clarified					
d.	Conflicting issues were easily solved					
e.	Board of management leadership offered clear sense of direction in the adoption of digital learning					
f.	Board of management leadership facilitated linkages to support services					
g.	The leadership was always available to offer the necessary guidance					

h.	The leadership offered effective supervision in the implementation of the Digital Literacy Programme					
i.	The school leaders give room for learning and improving					
j.	The school leadership evaluates use of digital tools.					

### TEACHER-TRAINING

<b>Teacher-training and Implementation of DLP</b>						
	<b>Teacher-training and Implementation of DLP</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
a.	The digital training met teachers needs					
b.	The training content was relevant					
c.	The training offered practical skills for the adoption of digital literacy					
d.	The training was done frequently					
e.	The training approach was learner centered					
f.	The training duration was adequate					
g.	Through training, teacher was able to solve learning issues					
h.	The training empowered teacher in driving the change required in digital learning					
i.	Training offered important knowledge in driving change in teaching					
j.	The training had a follow up on what was trained after its conclusion					

**-The end-**

**Thank you for participating!!**

## **Appendices III: Interview Guide for Head-teachers and Chairmen for Board of Management and Infrastructure Subcommittee**

### **INTRODUCTION**

Research purpose, record the gender, inquire about qualifications as well as experiences

### **MAIN QUESTIONS**

1. Could you please explain to me how Digital Literacy Programme (DLP) was implemented in your school (probe on meeting goals, teaching effectiveness, teaching innovativeness, teacher contentment)
2. In your opinion how has digital infrastructure affected implementation of the DLP (probe on digital tools, digital learning materials, digital networks)
3. How has ICT technical support contributed to the implementation of DLP (probe on availability, teacher focus, satisfaction)
4. How can you describe the contribution of board of management leadership to the implementation DLP (probe communication, motivation levels, conflict resolution)?
5. According to you, how effective was the training of teachers on digital literacy and how has it contributed to the implementation DLP (probe on training needs, type of training and content of training)
6. What else would you like to share with me about the implementation of DLP?

### **CLOSING WORDS**

Are there more institutional issues that you feel are important in successful delivery of DLP in your school?

## Appendices IV: Opening Letter from University



**UNIVERSITY OF NAIROBI**  
**FACULTY OF BUSINESS AND MANAGEMENT SCIENCES**  
**OFFICE OF THE DEAN**

Telegrams: "Varsity",  
Telephone: 020 491 0000  
VOIP: 9007/9008  
Mobile: 254-724-200311

P.O. Box 30197-00100, G.P.O.  
Nairobi, Kenya  
Email: [fob-graduatestudents@uonbi.ac.ke](mailto:fob-graduatestudents@uonbi.ac.ke)  
Website: [business.uonbi.ac.ke](http://business.uonbi.ac.ke)

Our Ref: **L50/10073/2018**

July 21, 2022

### TO WHOM IT MAY CONCERN

#### **RUTERE DENIS MURITHI- L50/10073/2018**

This is to confirm that the above named is a bonafide student undertaking Master of Arts in Project Planning and Management at the Faculty of Business and Management Sciences, University of Nairobi.

**Mr. Rutere** has successfully completed the fourteen (14) course units (Part I) of the degree programme.

Any assistance accorded to him will be highly appreciated.

A handwritten signature in black ink, appearing to read 'Philip Mukola'.

**PHILIP MUKOLA (MR)**  
**FOR: ASSOCIATE DEAN,**  
**FACULTY OF BUSINESS AND MANAGEMENT SCIENCES**

PM/pgr



## Appendices VI: Antiplagiarism Report

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