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DEPARTMENT OF INFORMATION SCIENCE

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Investigating the Effect of Digitization on Workflow and Organizational Performance in Selected Ethiopian Higher Education Institutions

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DECLARATION

This MSc thesis is my original work and it has not been presented for fulfillment of a degree in any other University and all sources and materials used for the thesis are duly acknowledged.

Shibiru Terefe

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List of Abbreviation

ANOVA: Analysis of Variance

CD ROM: Compact Disk Read Only Memory

CRM: Customer Relation Management

DVD: Digital Versatile Disk

DW: Digitizing Work

ERP: Enterprise Resource Planning

HEI: Higher Education Institution

HEIs: Higher Education Institutions

HR: Human Resource

HRM: Human Resource Management

IBX: Integrated Business Exchange

ICT: Information and Communication Technology

IT: Information Technology

JU: Jimma University

MeU: Mettu University

MIS: Management Information System

RFID: Radio Frequency Identification

SIS: Student Information System

SPSS: Statistical Package for Social Sciences

SRS: Students Registrar System

UNESCO: United Nation education, Science and Cultural Organization.

WOU: Wollega University

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Abstract

Digitization is the representation of a physical item with the goal to digitize, preserve and automate processes or workflows. It plays vital role in an organization and has effect on workflow and organizational performances to give both opportunities and solutions for the quality, efficiency, innovation, positioning and visibility of higher education institutions. The aim of this study was to investigate the effect of digitization on workflow and organizational performance in selected Ethiopian Higher Education Institutions. The study areas selected for research were Jimma, Mettu, and Wollega Universities. Cross-sectional research design was used in this study. The study employed both qualitative and quantitative approaches. Data present in the study were obtained from primary and secondary sources. Instruments such as questionnaires, interview and observation were used in this study. The data was analyzed by descriptive and inferential statistics methods, with SPSS software version 25. The study found that digitization has statistically significant in terms of time, cost, repetition and errors reduction, efficiency, delivery services in administrative offices of Ethiopian Higher Education Institutions. Moreover, the study found that there are challenges of implementing new digital technologies in administration offices such as, lack of skilled personnel, lack of awareness, lack of interaction between managers and employees, inadequate training, lack of attention among institutions, system problems, lack of a clear guidelines, and polices. With regard to organizational performance, all three universities are effective. However, according to their experience of using digitization JU and Wollega Universities were more effective than MeU. In particular HR, registrar and finance offices of selected universities were effective by using digitization in their workflow. But, due to lack of digital technologies in transport offices there was limited implementation of digitization in their workflow. Therefore, Universities should increase awareness, provide training and human capacity. In addition, as well as policy makers and ICT professionals should establish clear guideline for the use of digitization and new digital technologies in HEIs, for more effective workflow and organizational performance. Managers should facilitate among with their employees to implement and use new digital technologies in their offices.

Keywords: Digitization, Higher Education Institution, Organizational Performance

Chapter One

1. Introduction

1.1. Background of the study

Digitization is the penetration of Information technology in an organization. It is a complex organizational phenomenon in that it involves changes in organizational strategy, business processes, organizational knowledge, and the whole socio-technical organizational system (Nilesh & Ki, 2016). Digitization is termed as one of the innovations in the sector of education and it indicates the different activities that direct to the modernization of the business model or regarding the education sector. Also, the term digitalization refers to the conversion of paper mode or typewritten information into the digital form (encoding it into zeroes and ones). It is the adoption and implementation of digital technologies into a business, home, or organization. This adoption and implementation allow businesses or companies to optimize their automated processes and utilize digitization (Johansson, 2017). Digitalization denotes the usage of any digital assets institutions can use to increase their performance and the effects of the technologies that have been needed on how the world works. This comprises all digital communication technologies as well as automated systems along with data storing devices. The digitization of activities was first introduced a long time ago, most frequently in early 1990, with developments in computerization and Information and Communication Technologies (ICTs). The new tools made available by the digital transition were also driving to a rationalization of work organization (Peña-Casas, R., Ghaliani, D., & Coster, S. , 2018).

The digital revolution affects organizations as well as individuals. For present purposes, the digital revolution refers to the transformation process of analog data into a digital format (Michael. & Albena, 2018). Digital technologies play a role in all aspects of operating, controlling, and coordinating the activities of organizations (Park, Y., & Saraf, N., 2016) Digitization is used for automating and augmenting tasks, communicating internally among organization members and externally with customers and partners, and in collaborative decision making among digital and human agents (Davenport & Kirby, 2015). Performance is achieving organization objectives, missions, and reaching the goal. It is the change of inputs into output for

reaching to certain outcomes (Criveanu & Ion, 2016). Organizational performance is based upon the idea that an organization is the voluntary association of productive assets, including human, physical, and capital resources, to achieve a shared purpose. Organizational performance represents the method by which the company is organized to reach its objectives and the way it manages to reach them. Changes in organizational performance consider reduction in the duration taken in processing critical tasks and elimination of repetitive tasks resulting in higher productivity and efficiency as well as better and quality service delivery (Barney, J., Wright, M., & Ketchen Jr, D. J, 2001).

Higher Education Institution (HEI) is an instrument of poverty reduction and sustainable development that requires the participation of all sections of the community. The need to broaden higher education opportunities for underrepresented groups argued concerning social justice, economic efficiency, and equitable distribution of wealth (Tamrat, 2019). Digitalization has innovative and transformative effects on most modern industries, including Higher Education. The effects of digitalization have been mostly evolutionary and that HEIs themselves are usually the driving force behind such evolution (Kergel, D., Heidkamp, B., Telléus, P. K., Rachwal, T., & Nowakowski, S., 2018). The benefit of digitization is that it enables greater access to collections of all types. All materials can be digitized and delivered in electronic form. Digital materials can be made available to broader audiences than those who can travel to see the analog collections. Also, digitizing library resources are used to access the support of preservation activities, collection development, institutional and strategies benefits, research, and education. The major impact of digitalization on organizations is more accessible and apparent of information. Digitalization has made it much easier to making information available for all personnel, who have before remained working with limited knowledge of the big image of the business. This permits employees to make more informed decisions at lower levels of the institution (Kuusisto, 2017).

Workflow is a chronological, predictable combination of data, guidelines, and tasks that make up every day processes at an organization. Organization’s work flow is consisting of the set of processes it must accomplish, the set of individuals or different resources offered to perform

those processes, and therefore the work flow analysis has usually been used with the goal of rising effectiveness (Carol & Saira, 2008). Work flow automation permits a corporation to make a work flow model and parts, like on-line forms, to manage and enforce consistent handling of tasks and usage of resources. Electronic work flow systems are wide utilized in instruction establishments for administering the daily and routine operations (Cheung, 2011).

(Assefa,C, G. G. A. A. A., 2018) conducted a survey study on the status of the digitization process in the selected institutions of Addis Ababa city, Ethiopia. The aim of their work was mainly to find the status of the digitization process in private and public organization. However, the main aim of current study was to investigate the effect of the digitization on workflow and organizational performance in administrative offices of selected HEIs and to develop its framework.

1.2. Statement of the problem

Digitalization has become a 'buzz word' in recent years indicating several diverse but, matching technological developments (Peña *et al.,* 2018). Digitization and its consequences are affecting our everyday lives in several ways (Neumeier, A., Wolf, T., & Oesterle, S., 2017).

Recently not only the integration and utilization of innovative technologies and business models matter, but it is also essential to understand the interdependences and impacts on the fundamentals of organizational performance. The continuous change that the digitalization of things is bringing along is having a major impact on the workforce at various levels such as rationalization, knowledge, performance, efficiency, the skill of employees (Foerster-Metz, U. S., Marquardt, K., Golowko, N., Kompalla, A., & Hell, C. , 2018).

Digitalization has made it much easier to making information available for all personnel, who have before remained working with limited knowledge of the big image of the education. This permits employees to make more informed decisions at lower levels of the institution. Digitalization affects internal learning by enabling categorization and better analysis of knowledge (Kuusisto, 2017).

Nowadays the advancements in intelligent automation and artificial intelligence start to cast a shadow over higher qualified resources. Having a formal qualification is no longer a guarantee for a lifelong secured career; this is due to the fast changes in technology that can no longer be secured by the educational system (Foerster *et al.*, 2018).

Concerning to digitization of information resources in academic Institutions, there are many challenges in digitization exercise which include, hardware and software, copyright issues, strategies and policies, technical support and security, skilled manpower, budget, and unavailability of needed materials amongst others (Toyo and David , 2017). Digitization works has its own effect on organizational performance. The effect of digitization on performance is measured in terms of time saved, cost reduction, speed, quality, reduction of errors and employee satisfaction (Ramiro & Wayne, 2016). Currently, the digitization of the organization's working environment is highly dependent on digitization works. Ethiopian Higher Education institutions are trying their best to perform their day to day works in digital, for instance Jimma University using SRS, MIS (Management Information System), IBX (Integrated Business Exchange) and E-Learning in registrar, human resources, finance and academic offices respectively. Wollega University practices digital technologies such as RFID (Radio Frequency Identification), SIS, E-learning and IBX in offices of human resources, registrar, academic and finance offices. Also, in Mettu University E-learning, SRS, FileZilla and IBX the adopted digital technologies in offices of academic, registrar and finance offices. However, in Ethiopian HEIs there is lack of awareness and lack of adopting with new technologies. Since, this study was found out the problem occurred in workflow regarding to digitization and its effect organizational performance in administrative office of selected Ethiopian HEIs.

1.3. Research Questions

- What is the effect of digitization on workflow in administrative offices of HEIs?
- What is the effect of digitization on organizational performance in administrative offices of HEIs?
- What are challenges of implementing new digital technologies in administrative offices of HEIs?

- Which is the suitable framework for the factors that affect the effectiveness of digitization in administrative offices of HEIs?

1.4. Objective of the study

1.4.1. General objective of the study

The main objective of this study was to investigate the effect of digitization on workflow and organizational performance in selected Ethiopian Higher Education Institutions.

1.4.2. Specific objectives

The specific objectives of this study were:

- To study the effect of digitization on workflow in administrative offices of HEIs
- To investigate the effect of digitization on organizational performance in administrative offices of HEIs.
- To identify the challenges of implementing new digital technologies in administrative offices of HEIs.
- To develop a framework for the factors that affects the effectiveness of digitization in administrative offices of HEIs.

1.5. Scope and Limitation of the Study

To make the research manageable, the researcher limited both time and the area of the study. In this way, it has spatial, temporal, and thematic scope. Regarding the spatial scope of the research, it mainly focuses on the investigation of the effect of digitization on workflow and organizational performance of in administrative offices of selected Ethiopian HEIs. The study only focused on three universities Jimma, Mettu, and Wollega Universities based on the existence of digitization and experience, generation of Universities. In this study all staff of the universities were not considered but the employees in administrative offices such as human resource, finance, transport, registrar office and support staff (ICT). Also, managers of those offices are the participants of this research. Therefore, researcher focused on some active current digitization and its effect on workflow and organizational performance as well as to identify the challenges

of implementing the digital technologies in administrative offices of selected HEIs. The data collection for this research was conducted between June 2020 and December 2020. The study was restricted to the administrative offices of three selected universities context and hence the results may not be generalized to all other offices. Second, this research did not study before and it is new in Ethiopia thus hard to get local literature. The third was related to the participants and pandemic disease (COVID-19). Due that the respondents haven't trust to respond the questionnaire at the required time and it was also difficult to communicate with them freely, because, of to protect themselves from the spread that disease. In addition, some of the respondents not willing to fulfill open-ended question. Another limitation was that respondents of organizations were geographically dispersed and this lowered the rate at which data was collected.

1.6. Significance of the study

In the 21st century, the application of digitization in the education sector leads to a learning environment. Digitization of works improves the efficiency and effectiveness of institutional performance. In the scenario of digitization, the education sector needs to have updated and innovated with an adequate proportion of techniques. This study benefits University policymakers by providing valuable information on the extent to which organizational performance of Jimma, Mettu, and Wollega Universities. Secondly, the study benefits the administrative offices by improving their performance towards their clients of the Universities. Finally, the study supports the future researchers as their guide and also hopefully bridge some gaps that the previous researchers left as far as factors affecting organizational performance in Higher Education Institutions are concerned.

Chapter Two

2. Literature Review and Related Works

2.1. The concept of digitization

Digitization is defined as the dissemination of IT in the organization and it is a complex organizational phenomenon that contains changes in organizational strategy, business processes, and organizational knowledge. The concept is since digitization considers not only investment in new IT but, also training employees of IT functions and actual IT usage (Park *et al.*, 2016). Digitization is about changing organizations and bringing them to a more connected world. Digitization is a worldwide concept more than a specific technology. In that respect, it can be reflected as an organizing vision (Foerster *et al.*, 2018). Digitization is the process of analogue contents are converted into the sequence of 1s and 0s and put into binary code into readable by the computer (Khalid, J., Ram, B. R., Soliman, M., Ali, A. J., Khaleel, M., & Islam, M. S., 2018). Digitized information has a common characteristic as well as qualities when the content is stored on Digital Versatile Disk (DVD), Compact Disk Read Only Memory (CD Rom), or other digital storage medias. Digitization is also the means of creating resources that can be repurposed for unexpected uses in the future (Davi, 2005).

The development of a new field of study that is the collection once perceived as ephemeral or of low research value is now heavily researched. Similarly, the collection of items once, heavy demand has now vanished to off-site storage for lack of use. So, digitization is especially advantageous for maintaining access. The world has changed extremely since then and the amount of digitized data is increasing at an exponential rate. Additionally, in the past ten years, office work has been shifting from repetitive tasks to knowledge-based, flexible, and adaptive tasks. It has been solved that employees waste significantly less time and company resources during they have accessing to the right information at the right time (Attaran, M., S., & Kirkland, D., 2019).

Digitization indicates the adoption of digital technologies in business and society as well as the related changes in the connectivity of individuals, institutions, and objects (Nils & Maximilian, 2019). Although digitization covers the technical process of converting analog signals into a

digital form, the various socio-technical occurrences and processes of implementing and using digital technologies in broader individual, organizational, and societal contexts are commonly referred to as digitalization. The transformation of development in digital technology makes choosing the right method of digitizing resources an increasingly complex process for information organizations. Digitalization is the use of different tools converting analog information into digital information. Hence, it resulted in the increased presence and use of connected databases and scheduling tools, in the form of software for devices such as computers, tablets, or smartphone apps (Legner, C., Eymann, T., Hess, T., Matt, C., Böhmann, T., Drews, P., ... & Ahlemann, F. , 2017).

Digitalization indicates the use of technologies to innovate, simplify, and improve. It offers new and better services that are easy to use, efficient, and reliable. Digitalization changed all sectors of society and is drastically changing the way of working, life, communication, and interactions. Therefore, digitization is the structured organizational phenomenon in that it engages changes. Also, it is considered in organizational strategy due to new IT implementation, business processes, organizational knowledge, and eventually the whole socio-technical organizational system. So, it affects organizational performance. Mostly, digitization enables administrative solutions, a system for data security, the system to detect cheating, plagiarism, storage of research data, library services, and diverse learning resources, as well as opportunities for better collaboration across campuses (Khalid *et al.*, 2018). Higher education and research are a complex and diverse area. Thus, it is necessary to place the more operational aspects of ICT and digitization attempts in the higher education sector in the subordinate administrative agencies and the institutions themselves, individually and jointly (Tremblay, Karine, Lalancette, D., & Roseveare, D., 2012). Currently, digitalization and new platforms are of powerful and growing importance for the sector, and in the coming years. ICT solutions will have a great impact on education and research. Through digitization, it would be created opportunities for new and different learning and teaching processes, as well as new forms of organization and communication (Wayne & Ramiro, 2016).

2.2. Workflow and Digitization

Workflow is the set of obligations looked after series into techniques and consequently the set of humans or assets wanted for the ones responsibilities which might be essential to perform a given goal. Also, workflow is a chronological, predictable combination of data, guidelines, and tasks that make up every day processes at an organization. By defining workflows digitally, a company consumer can appearance up critical information instantly, preserve music of methods and tasks, streamline them for best productivity, and automate them. Organization's work flow is consisting of the set of processes it must accomplish, the set of individuals or different resources offered to perform those processes, and therefore the work flow analysis has usually been used with the goal of rising effectiveness. In response to monetary pressure and incentives driving supplier organizations, minimizing slack time has become necessary. Work flow analysis is wont to design existing processes (Carol & Saira, 2008).

Workflow consists of the intelligent routing and following of data to regulate and coordinate execution of tasks supported some pre-defined structure polices. Work flow automation permits a corporation to make a work flow model and parts, like on-line forms, to manage and enforce consistent handling of tasks and usage of resources. It permits the creation of economical, effective and manageable the method which might end in important time savings and stop delays. Electronic work flow systems are wide utilized in instruction establishments for administering the daily and routine operations (Cheung, 2011)

Digitalization covers the way for more efficient works situations in which digital tools are the central building blocks and enable decreasing the space dedicated to paper documents and physical archives. The objectivity of time and place is a precondition for a networked institution, which again calls for efficient digital tools to support work. These applications offer workers the opportunity to interact digitally. For example, instantaneously creating and editing documents or having teleconferences, enabling asynchronous and multi-dimensional work, and making it more efficient. Efficiency is the great distribution of resources, i.e., any resource is available, but used only if needed. However, even if a tool is assumed to improve efficiency, people are likely to hold on to their old work conditions and ways. When employing a tool perspective in directing

knowledge work, attention should be waged to potential utility (Vuori, V., Helander, N., & Okkonen, J., 2018).

Figure 2. 1. Digital workplace and Creating Connections (Mohsen, *et al*, 2019)

2.3. Organizational performance

Organizational performance is the set of financial and non-financial indicators that offer information on the degree of achievement of objectives and results (Lebas and Euske, 2004).

Organizational performance is the ability of an organization to achieve its mission through management, good governance, and continuous change to bring results. In most institutions in the world, organization performance is viewed as a performance that reaches the effectiveness, efficiency, competitiveness in achieving their mission, purpose, or goals of the organization. Organization performance is a concept that measures the analysis of effectiveness and efficiency of the outcome of the institution activities where the accomplishment of a given task is evaluated against preset known standards such as accuracy, completeness, cost, speed, flexibility, quality of supplies, and supplier profile among many others (Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. , 2009).

The organizational performance involves analyzing the performance of an organization by comparing its set standards against its actual achievements. Performance can be defined as a collection of work activities, operational efficiency and effectiveness, their measurement, and subsequent outcomes attained. Methods used to measure organizational performance are

comparative to the framework in which the organization operates and the strategic purposes pursued by the institution (Akinyi, 2012).

According to Mccue and Roman, (2012) states that organization performance has been impacted by technology to reducing transaction costs, efficient processes, contract compliance, reduced lead times, and reduction in inventory costs (Mccue and Roman, 2012).

2.4. Performance in Higher Education institution

Higher education has a critical factor in innovation and social capital development and plays a core role in the achievement and sustainability of economical knowledge (Dill and Vught, 2010). HEI has become increasingly useful on national agendas and has undergone profound transformations and reforms worldwide over the past decades. As current as forty to 50 years ago, better training basically mentioned the conventional studies universities. Today HEIs are more diversified and are closer to formed models attended by larger segments of the population. Higher education today is characterized by huge expansion and wider participation. Those are the emergence of new players; more diverse profiles of HEIs, programs and their students; broader adoption and more integrated use of communications and educational technologies, increasing emphasis on performance, quality and accountability (Tracey, 2008).

The higher education institutions (HEIs), which are located on the top of the education systems, with their roles in producing and disseminating knowledge are involved in directing the social changes brought about by the digital connective technologies and they are influenced by these social changes in return. The roles, responsibilities, and functions of the HEIs change depending on the socio-economic conditions of the ages they operate in. Today, the HEIs are expected to fulfill several roles including educating qualified individuals for the knowledge age through engaging and effective learning experiences. They are also expected to lead the technological advancements through research and development in collaboration with the society and the industry thereby contributing to societal and economic development (Saykili, 2019). Increasingly, organizations are assessing their opportunities, developing and delivering products and services, and interacting with customers and other stakeholders digitally. Mobile computing, social media, and large information are the drivers of the destiny workplace, and those and different digitally-primarily based totally technology are having huge financial and social

impacts, which includes elevated opposition and collaboration, the disruption of many industries, and strain being placed on agencies to increase new skills and remodel their cultures (Andersen, E., Johnson, J. C., Kolbjørnsrud, V., & Sannes, R. , 2018). Organizational performance is measured to capture the performance relative to competitors in terms of productivity, sales growth, and profitability each year (Richard *et al*., 2009).

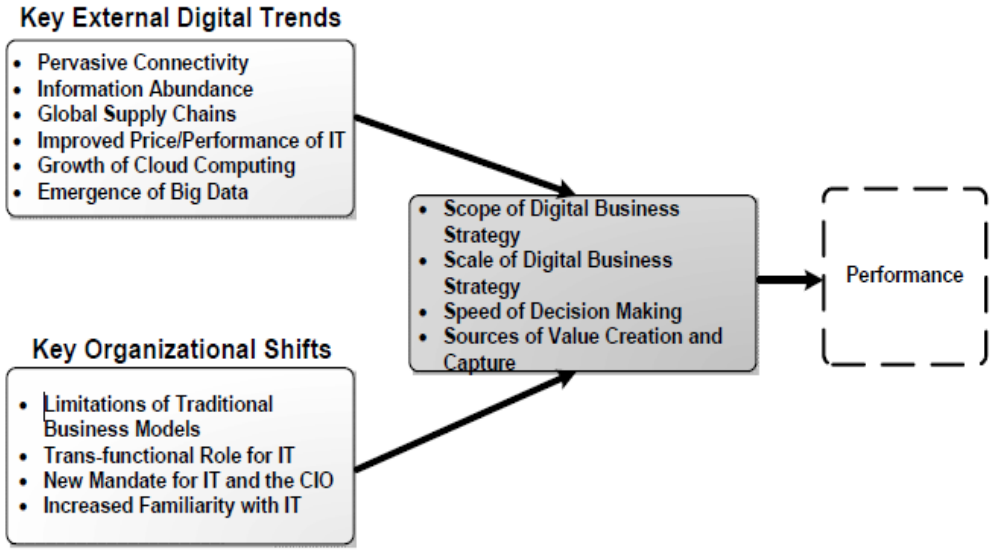

Figure 2. 2. Organizational performance categories and performance (Source: Paul *et al*., 2013)

2.5. Digitization in Higher Education Institutions

Higher education institutions (HEIs) are in a struggle to participate in students' mobility, funding, and global rating and most effective individuals who probably improving superior virtual skills will live withinside the competition. Higher Education in its nature is significantly shifting due to the appearance of advanced technologies and globalization. It is certainly likely that this shift will continue remarkably in the future (Khalid *et al.*, 2018). Higher education is an instrument of poverty reduction and sustainable development that requires the participation of all sections of the community. The need to broaden higher education opportunities for underrepresented groups argued concerning social justice, economic efficiency, and equitable distribution of wealth (Tamrat, 2019). A virtual group is one which runs all elements of its commercial enterprise with virtual era on the heart. So, connecting all the benefits to enhance the brand, achieve financial

stability, and further academic excellence. Universities, like all modern businesses, they need every means to drive efficiency and cost-saving. But, to gain those objectives, the college would possibly really lessen departmental budgets, which includes the price range for IT. This caused the immediate and unfortunate effect of positioning IT as the cost center, rather than the value center. More HEIs are having specific digital plans and strategies in response to the huge move towards using advanced technology, nevertheless, lack the IT literacy skill, assurance or vision to implement them effectively (Cisco, 2017). HEIs are responsible for providing the services and for the value creation to be supported by digitization and each institution has a delegated responsibility for its ICT systems and the initiation of digitalization measures. Institutions are responsible, for example, for information security within their own infrastructure, systems, and services, even when these are outsourced to third parties (Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. , 2013).

Digitization in Higher Education (HE) institutions is an issue of that concerned many educational stakeholders. ICT skills are becoming increasingly relevant in every context, especially in the workplace (Bond, M., Marín, V. I., Dolch, C., Bedenlier, S., & Zawacki-Richter, O. , 2018). The digital workplace is defined as the collection of all the digital tools in an organization that allow employees to do their jobs. Those tools include intranet, communication tools, email, Customer relationship management (CRM), Enterprise resource planning (ERP), HR system, calendar, and different employer tactics or equipment which help withinside the well-known day after day functioning of a business. Getting a virtual administrative center transformation proper is critical for sustainable commercial enterprise fulfillment in a brand new virtual-first, consumer-centric commercial enterprise world. The digital workplace affects physical workplaces, technology, and people (Attaran *et al*., 2019).

The digitalization of HEI is the transformative process that sustainability impacts all activities of higher education institutions. It diffuses all processes, places, formats, and objectives of teaching, learning, researching, and working in higher education. This digital transformation involves the development of new infrastructures and the increasing use of digital media and platforms for teaching and learning, research, support services, administration, and communication (Mohammad, 2018) The positive impact of digitalization on the organization's

effect is speed, accuracy, performance, and productivity. Although, keeping advance with science and modern platforms to get benefits from all fields adds to provide speed and good solutions to the public. The negative impact is considered only on the human element which allocating due to job dissolve. One of the major impacts of digitalization on the organization's work is flexibility which affects the interaction and communication between the workers and their organizations. Digitalization and technology direct the workers to deal with the development of more flexible ways of performing works. The most visible results that can enhance flexibility in the organization are a place in which it is very important to determine the working place to the employees (Mohammad, 2018).

2.6. Elements of Digitization

Organizational digitization plays up the importance of the effect of all three key appearances of digitalization such as IT spending, IT training, and IT usage on organizational performance (Wade and Hulland, 2006).

For example, two institutions with the same amount of IT spending and budget can have different performance depending on their specific IT training and actual IT usage bring with specific business strategy. But there is a lack of studies on how such elements of digitization can provide efficiency or flexibility strategy to achieve competitive organization performance. The interdependent relationships among digitization and organizational strategic elements result in high organizational performance. The impact of Information technology on performance can differ depending on organizational specific strategies. Also, it is well accepted that IT-business strategic alignment supports to achieve competitive firm performance. Understanding of the process that new IT implementation influences organizational performance still needs to be investigated (Sharma and Yetton, 2007) Due to close together interdependencies between digitization, strategies and other organizational elements digitization elements by themselves not fully explain the complex mechanisms that determine the ways that digitization impacts organization performance. There are three elements of digitization such as IT spending, IT training, and IT usage. Also, there are four strategy elements of human resource (quality, delivery performance, flexibility, and cost. In this manner human resource management aligned to commercial enterprise techniques primarily based totally on fee reduction, quality, transport

performance, and product). IT and strategy elements systemically combine into configurations to produce competitive performance (Schwarz, 2014). With the configurations, digitization plays different roles, either enabling or holding. Organizations can achieve high performance by building internal IT strength configurations or by building externally inter-institutional collaboration. Scholars have studied how IT aids organizational flexibility and efficiency by taking a variety of views and approaches, including business strategy-IT. Information technology enables dynamic capabilities and IT value as resources for competitive advantage. The impact of Information Technology on the individual, organization, and industry levels focuses on the potential of IT to automate repetitive business processes and so, improve efficiency (Wade and Hulland, 2006). Implementation of new digital technology in an organization supports the organizational strategy of efficiency and flexibility to enhance organizational performance. It influences on organizational change and eventual performance due to its complex interactions with strategies and organizational factors. Managers implementing IT investment decisions face the challenge of achieving effective with all of the factors such as IT implementation costs, employee training of new IT, and adaptation to and appropriation of new IT, eventually impacting on the whole organizational system. The organization's objective is to achieve longer-term competitiveness through rapid innovations or to achieve efficiency for short-term sustainability (Sharma and Yetton, 2007)IT spending intensity is an important element to explain the impact of digitalization on organizational productivity. Also, it plays a critical role to determine productivity how much spend is certainly important, how to use IT. To effectively use IT, training is necessary. IT training gives to employees the following new IT. It is critical in a post-implementation stage to achieve a positive impact on organizational performance. IT training increases either the business skills of IT staff or the IT skills of functional staff, which facilitates greater usage of new IT. The goal of IT training is to adapt the existing knowledge and practices that have a fix around an older application to new technology (Sharma and Yetton, 2007).

Therefore, IT training makes users to new behaviors by helping them recombine explicit knowledge of new technology features with their implicit knowledge of the current business context, older technologies and provides them with new insights of their functional interdependence with other work units. IT training enhances critical initial knowledge in

individuals that enables them to find quick support when problems arise with performing works on the new technology. It helps them to better adapt the technology to varying business conditions. Scholars are argued that when the number of employees trained is low, the usage is equivalently low. As well as the number of employees trained increases, the usages of IT also increase. This generates externalities by positively disposing of other untrained employees to the new technology. As more employees are trained it makes informal ethics concerning using the new platform (Leonard and Deschamps, 1998).

An institutional explanation of organizational digitization often refers to the effect of workplace culture that positively transforms employees towards new technologies (Gallivan and Benbunan, 2005). More effective and more often use of technologies enabled by new IT and IT training can increase employee's flexibility to do new unexpected tasks as well as efficiency in doing existing tasks, and eventually increasing organizational performance. Digitization provides appropriate functions that enable organizations to develop abilities to more effectively develop new products that reflect changing environments (Sambamurthy, V., Bharadwaj, A., & Grover, V. , 2003).

2.7. Related Works

There are some scholars who investigated the digitization works benefits, roles, challenges, and effects on organization performance in various aspects. Therefore, the researcher was considered the following local and foreign research works as related works based on their relatedness with this study.

Recently, Sabai & Theresa., (2018) investigated the capability and role of digitization on organization work performance. These researchers in their study investigated the role of digitization linked with organization work performance in which rapid change of digitization was enabling an organization to do their tasks effectively and efficiently. Therefore, a survey research method was used and 150 small and middle-sized firms founded in Malaysia were included in the study. As result, digitization works had a positive effect and a capability of improving financial and non-financial performance on the organizations. However, the current research was aimed to investigate the whole digitized works performed in administrative offices working on selected Ethiopian higher institutions. Since the current work was focused on exploring the

current digitized works on these offices and the challenges that affect the organization's performance to come up with a suitable framework to handle the problem.

Bayissa, Getachew., Ketema, G., & Birhanu, Y.,(2010) conduct a survey study on the status of the digitization process in the selected institutions of Addis Ababa city. The aim of their work was mainly to find the status of the digitization process in private and public organization to find out the current problem and recommend the solution to enhance the benefits of digitization in various aspects including organizations' performances. Therefore, their findings showed a lack of awareness, resistance to the transition of from a digital system, intellectual property issues, the impact of organizational dynamics, poor long-term plans, the need for the management system, and lack of clarity in interpreting the digital world was factors that affect the digitization process and works in the country as all. Furthermore, on the issues of access and retrieve, interoperability, and preservation of original records 63% institution did not consider the standard of digitization and 74% of respondents confirmed there is a lack of proper standard guidelines in digitization works. However, the current research was focused on investigating the already active digitation works status and their effect on organization performance in selected Ethiopian higher institutions.

Eriksmo, A., & Sundberg, J., (2016) investigated how higher education is affected by digital technologies. The study aimed to analyze the existed digital technologies (materials) or digitized tasks in the academy to provide insight for decision-makers before investing in new digital technologies. To that, those researchers take a multi-touch medical display table in veterinary education and collected the data through interviews. Therefore, the findings show that the materiality of digital technology affects all aspects of higher education if it is facilitated by the organization. Furthermore, the findings also show that the significance of digitalization technologies to boost the teaching and learning environment, but there is a need for analyzing new digital material before applying in the working environment. Since this study was focused on investigating the status of the existed digital technologies in higher education to support decision-makers to have a better knowledge about the need of changing manual works in digitization works or replace the adapted technologies by new digital technologies.

Furthermore, Mwangi, M., & Kariuki, S. , (2015) investigated the impact of information technologies or digitized works and its relationship with organizational performance in public services in Kenya. To do so, the researcher used a descriptive survey method. Since, the study findings showed that use various digital devices to perform works or their duties, therefore, the response at use digitized works explained that 82.4% performance is archived through that reason. In the end, the researcher recommends any organization to use IT systems and enable works through digitation to make effective services delivers to be competitive. Therefore, the current work was aimed to investigate the effect of digitization on workflow and organizational performance in administrative offices in selected Ethiopian HEIs.

Another interesting work was conducted by Vuori, V., Helander, N., & Okkonen, J., (2019) on enhancing the performance digitized knowledge works through exploring the existed challenges in financial management digitized works. The empirical findings showed that depending on the situation, digitalization has either a positive or negative impact on knowledge work performance. Furthermore, the study findings showed that information overload, always-on mode, psychological effects (stress, decreased job satisfaction) and technological shortcoming was the factors that are a constraint for the organization work performances.

In general, most of the previous studies were focused mainly on investigating the existed digitization works, technologies, or materials' current status, their effect and challenge on organization work performance wither decreased or increased. In addition to that, most scholars take one specific organization such as transport, human resources management, or focused on investigating and analyzing the effect, opportunities, and challenges of digitization of the teaching and learning process. However, this study was to investigating the current status and effect of digitization works in administrative offices (HR, finance, transport and registrar) of Higher Education Institutions. It is important because the administrative works are one of the main supportive works to boost the teaching and learning process or enhance the overall organization performance. Since, this study was found out the challenges of implementing digital technologies (lack of skilled human power, lack polices and guidelines, lack of awareness, lack of the interaction between the managers and employees, system problem) in administrative offices of HEIs. Also, the result of the study was indicated that digitization has positive effect on

workflow and organizational performance in terms of time and cost saving, reducing redundancy and errors in tasks, enhancing efficiency, delivery service and productivity in administrative offices of HEIs. The obtained results support policymakers, managers, universities and domain experts to direct the way of enhancing organizational performance.

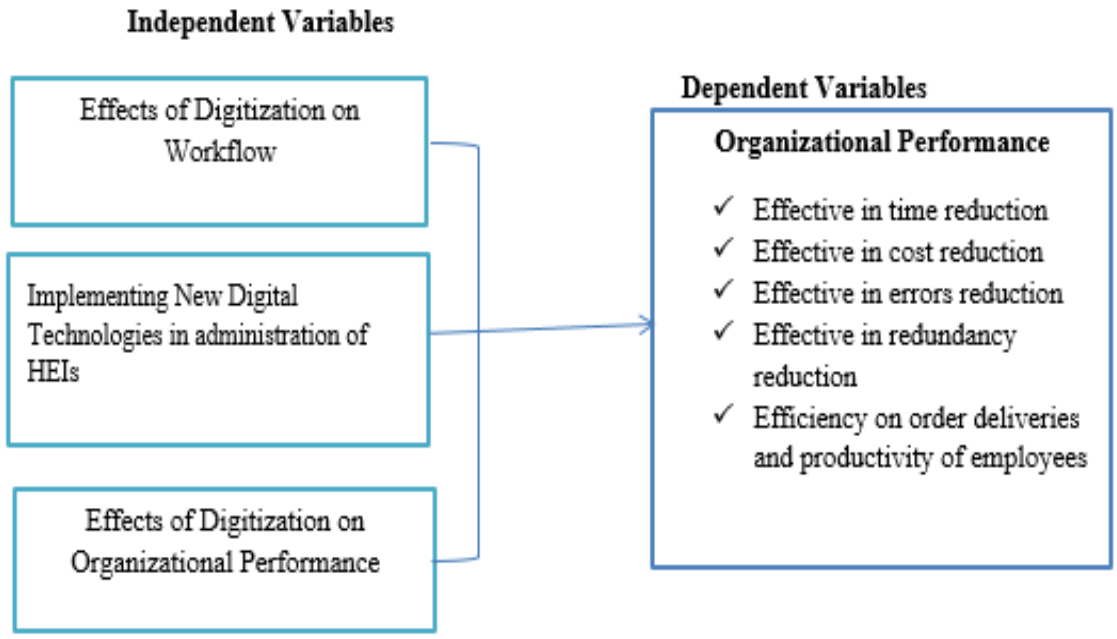

Figure 2. 3. Conceptual framework of the study

Chapter Three

3. Methodology

3.1. Research Design

This study used a cross-sectional research design to investigate how digitization works affect organizational performance among HEIs. The reason for selecting a cross-sectional study is easier to conduct the research; collect all the necessary data at a single time from different geographical location (Kothari, 2004). The study employed both qualitative and quantitative approaches. Qualitative approach permits the researcher to discover and higher recognize the complexity of a phenomenon. But, the quantitative method provides an objective measure of reality (Williams, 2007). The qualitative approach is justifiable as it helps in the generation of non-numerical data (Syed, 2018). While a quantitative approach on the other hand is useful for generating quantitative data. However, both approaches are considered useful as they enrich the study methods (Apuke, 2017). Qualitative data were collected to capture views and opinions of respondents concerning the effects of digitization works on organization performance in administrative offices of HEIs. The triangulation of the above two approaches subsequently helped to generate both quality and quantity information about the subject under study. With the help of quantitative approaches, it was easy to had a cleared and scientific view on the opinions by having them on questionnaires and analyze them with the Statistical Package for Social Sciences (SPSS version 25).

3.2. Source of Data

Data presented in the study were obtained from primary and secondary sources. Primary were collected directly from respondents using questionnaires and interviews. Secondary data were collected through a review of related literature and other published and unpublished materials related to the study.

3.3. Study Area

The researcher focused on investigating the effect of the digitization on workflow and organizational performance in the administrative offices of HEIs. The study area selected by the

researcher were Jimma, Mettu, and Wollega Universities. The selection was based on the existence of digitization and the experience of using digitization in their offices.

Jimma University (JU) was one of the public Higher Education Institution located in Jimma town. The establishment of Jimma University dates back to 1952 when Jimma College of Agriculture was founded. The University got its current name in December 1999 following the amalgamation of Jimma College of Agriculture (founded in 1952) and Jimma Institute of Health Sciences (founded in 1983). Jimma University is one of the 1st generation Universities. Recently it is in a critical development stage, and with the physical and programmatic development of the institution. Also, JU has built a digitization system for using information technology to reduce manual systems and make automation speedup woks. JU also provides several academic and non-academic facilities and services to students including a library, housing, sports facilities and/or activities, study abroad and exchange programs, online courses, and distance learning opportunities, as well as administrative services. Jimma University has become a hub of intellectual and academic activity that attracts thought leaders, innovators, educators, and leaders from around the country. It is frequently named the top-ranked public institution in the nation (JU, 2019).

Wollega University (WOU) is a public higher educational institution established in February 2007. The WOU is located on the verge of Nekemte town, which is 310 km away from Addis Ababa westwards, with beautiful scenery of landscape and a spectacular view of Mount Komto. It is situated in an area of 150 hectares. WOU is included in 2nd generation Universities and an innovative institution and a pioneer University to implement continuous assessment, student-centered approach, and active learning in the teaching-learning area to transform the traditional methods of teaching. Today, WOU is a comprehensive University engaged in the provision of all-rounded education, research, and community services (WOU, 2019).

Mettu University (MeU) is one of the public universities established in Ethiopia in 2010. It is located 600 km apart from the capital Addis Ababa to the South West of the country. It is located in Oromia National Regional State in Ilu Aba Bor zone. It is situated to the North West of Mettu town; the capital of the zone. It is one of the 3rd generation universities (MeU, 2019).

3.4. Study Population

The total populations of administrative offices of these three public universities are 632 which constitute the population of the study (337 from JU, 158 from WOU and 137 from MeU).

Table 3. 1 Total population of the three Universities and percentage

University	**Administration offices**	**Total Population**
Jimma University	Transport offices	91
	Registrar	40
	Support staff	116
	Finance	69
	Human Resource	21
Total		**337**
Wollega University	Transport offices	40
	Registrar	25
	Support staff (ICT)	45
	Finance	23
	Human Resource	25
Total		**158**
Mettu University	Transport offices	20
	Registrar	30
	Support staff	37
	Finance	28
	Human Resource	22
Total		**137**
Total of the 3 universities		**632**

Source: (JU, 2019, WOU, 2019 & MeU, 2019)

3.5. Sampling Techniques and Sample Size Determination

3.5.1. Sampling Techniques

Simple random sampling and purposive sampling techniques were used in this study. The purposive sampling method is suitable to achieve the objectives of the study. That is as a collection of data from the whole population were very difficult, costly, and time-consuming, it has been preferred to use sample methods based on the availability of time and cost. Thus, to obtain relevant and reliable information, a purposive sampling technique was used to select a sample of managers and support staff (ICT). Also, the researcher was used in simple random sampling. It is a strategy that adds credibility to a sample when the potential purposeful sample is larger than one can handle whereby it uses small sample sizes. This sample was used to select respondents from the administrative offices of Jimma, Wollega, and Mettu Universities.

3.5.2. Sample Size Determinations

Thus, to determine sample size from the total population of the study the researcher was used the sample size determination (Yamane, 2004) and summarized as follows:

$$n = \frac{N}{1+N(e)^2}$$

Where**: n** = sample size

N= population size

e = maximum variability or margin of error

1= probability of the event occurring

This formula assumes a degree of variability (proportion) of 0.05 and a confidence level of 95%, a sample size of employees.

The total population of the study (N=**632**) and margin of error (e=0.05) is

Therefore, to calculate sample size (n):

$$n = \frac{N}{1+N(e)^2}$$

$n = \frac{632}{1+N(e)^2} = \frac{632}{1+632(0.05)^2} = \frac{632}{2.58} =$ **245 (**total sample size of the study area).

Therefore, to calculate the sample size allocation (proportional allocation for administrative offices) of the 3 universities:

1.JU

$\frac{n*N1}{N} => \frac{245*337}{632} =$ **130**

2.WOU

$\frac{n*N2}{N} => \frac{245*158}{632} =$ **62**

3.MeU

$\frac{n*N3}{N} => \frac{245*137}{632} =$ **53**

The above 337, 158 & 137 indicates the total population of administrative offices of JU, WOU and MeU respectively. Also 245 indicate the total sample size and 130, 62, 53 are sample size of population from each three universities. To accomplish this study, the populations were administrative offices (HR, finance, transport, registrar and support staff) of JU, WU, and MeU. The study respondents were selected based on the profession and the job they work. Hence selected professionals were considered for this study. Hence, the sample size allocation (130) from JU, (62) WOU, (53) from MeU. They comprised of (245) members from three Universities.

Table 3. 2. The proportion sample of the (3) selected Universities

S/N	Name of the university	Proportion of the study population	Percent
1	JU	130	53.1%
2	WOU	62	25.3%
3	MeU	53	21.63%
Total		**245**	**100%**

3.6. Data Collection Instrument

This study was used both quantitative and qualitative data collection methods. Qualitative data are mostly non-numerical and usually descriptive or nominal (Syed, 2018). Quantitative data were collected by using questionnaires that was filled by the administrative offices employee and qualitative data were obtained from an interview with the administrative offices' managers and ICT office directorate manager. These instruments enabled researcher to explore the maximum possible data that current status of digitization in Jimma, Wollega, and Mettu University to perform works, the effect of digitization on workflow and organizational performance, and challenges of implementing new digital technologies in HEIs. Questions in the questionnaire were closed-ended that used to gather specific information from respondents. And the semi-structured interview was used to gather general information from HR, support staff, registrar, and transport and finance offices.

3.7. Procedure of Data Collection

The researcher got an approval letter from the department of Information Science to ensure that the ethical guidelines are followed throughout the data collection process. At the onset of data collection, the researcher get permission from the office of Jimma, Wollega, and Mettu University administrative offices, to help access the employees at their place of work. The discussion was initiated in an open space in a relaxed manner to encourage participants to express their ideas openly without any restriction. Each interview and questionnaire were contained an opening introductory letter requesting the respondents' cooperation in providing the required information for the study.

3.8. Method of Data Analysis and Representation

3.8.1. Qualitative

This was involved cleaning up of data from interviews and the questionnaires categorizing them into themes and patterns and making a content analysis to determine the adequacy of the information credibility, usefulness, and consistency (Julius, 2013). Qualitative data were

analyzed manually. All data sources were interpreted during the analysis to complement, increase validity, and at the end of it, a report was written.

3.8.2. Quantitative

The quantitative data analyses were consisted numerical values from which descriptions such as mean and standard deviations were made (Donald and Trom, 2006). The quantitative data gathered were organized, numbered, and coded then entered using SPSS software version 25. The researcher used descriptive to analyze data. Also, inferential statistics were used to show the face value of the measure of the effect of digitization on workflow and on the organizational performance as well as the challenges of implementing digital technologies in administrative offices of the selected Universities. The quantitative data was described by tables and charts.

The study utilized multiple regression analysis to predict the relationship between the dependent variable (y) and the independent variables (X_1, X_2, X_3 …). The adjusted coefficient of determination (R squared) was used to show the unpredictability of the variables.

$$Y = \beta + \beta X_1 + \beta X_2 + \beta X_3 + \epsilon$$

Where:

Y – Dependent variable

β – constant

X1, X2, X3 – Coefficient of independent variables

ϵ – Residual (error term 0.05)

3.9. Ethical Considerations

The respondents were assured the confidentiality of the information provided and that the study findings were used for academic purposes only and necessary corrective measures in the JU, MeU, and WOU administrative office performance. The protection of participants through the application of appropriate ethical considerations is important in all research study (Roshaidai, 2018). The researcher protected respondents from any harm that was occurred during the study. As much as possible mature, responsible members of the community were included in the study.

During conducting this research, the researcher made that all respondents properly explained the aim of the study, their rights, and their roles in the study. The respondents were made aware that respondents in the study are voluntary, and that they are free to withdraw from the research at any time.

The researcher had taken into account that persons with physical, cultural, and emotional barriers may require a very simple language to understand him. In this study, the researcher's requirement was fulfilled because the researcher can use the local language to communicate with respondents who can't understand the English language. During the study asking permission is given freely (voluntary), subjects should understand what is being asked of them, and involved persons must be competent to consent. This means, to participate in a research study, participants need to be adequately informed about the research, comprehend the information and have a power of freedom of choice to allow them to decide whether to participate or decline (Roshaidai, 2018). Therefore, while this study was conducted; the participants got the right to self-determination. The research objectives were explained to the target communities and permission to conduct research was granted. The researcher presented documentation about himself and the research before data collection was done in the field.

Chapter Four

4. Result and Discussion

4.1. Result

4.1.1 Response Rate

Out of the 245 sampled respondents, 210 respondents returned correctly filled questionnaires. This means that the response rate of the study was 85.71%. Out of the 210 questionnaires that were received back, 112 were from JU employees, 53 from WOU and 45 were from MeU and presented in the below table 4.1.

Table 4.1 Response rates of samples

S/N	Name of the university	Number of questionnaires		
		Distributed	Collected	Percentage
1	JU	130	112	86.1%
2	WOU	62	53	85.4%
3	MeU	53	45	84.9%
Total		**245**	**210**	**85.71%**

4.1.2 Demographic Characteristics of the Respondents

This section describes the general demographic information of the respondents as derived from the analysis of the study's data.

4.1.2.1 Gender of Respondents

In administration offices of the selected three Universities employee's component, out of 210 respondents, 121 were male and 89 were female. This accounts for 57.62% and 42.38% of the total respondents respectively as shown in Figure 4.1 below.

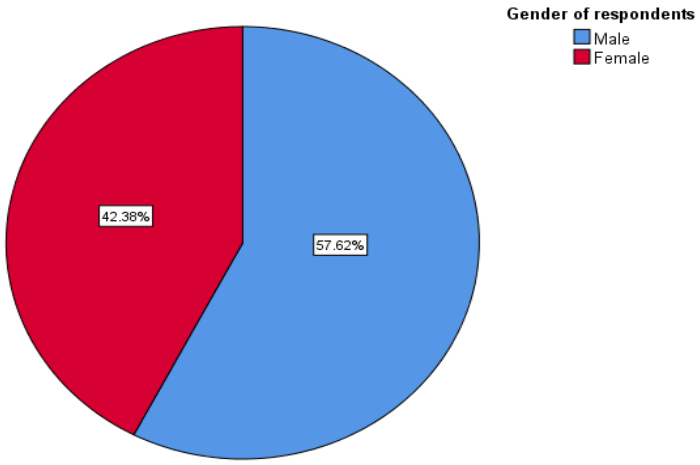

Figure 4.1 Gender of Respondents

4.1.2.2Age of Respondents

The respondents were distributed across various age brackets as evident in figure 4.2 below. Majority 64(30.5%) of the respondents were age between 26 and 33 years. People age of 34-41 years made 56(26.7%) of all the respondents. Also 50(23.8%) of the respondents were age 18-25 years. Respondents age 42-49 years made 30(14.3%). While 10(4.87%) of respondents were age above 50 years. Hence, this implies that many of the respondents were well knowledgeable about the effect of digitization on work flow and organizational performance. It showed in (figure.4.2) below.

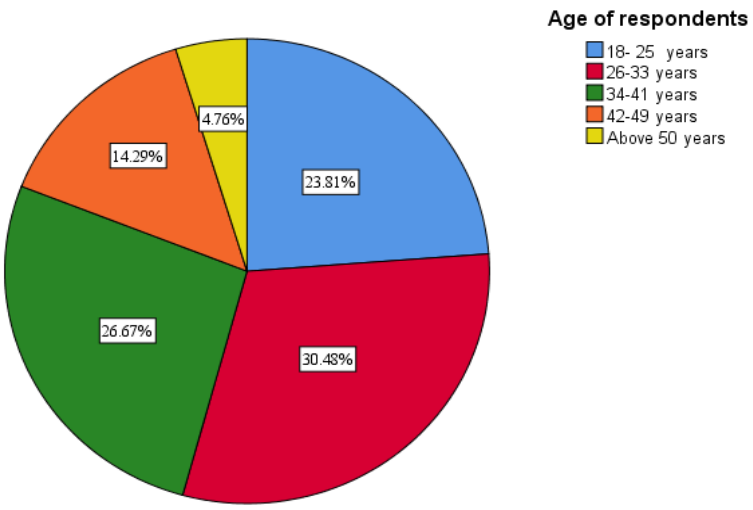

Figure 4.2 Age of respondents

4.1.2.3 Level of Education

The study sought to find out the highest level of education attained by the respondents and table 4.3, below shows the distribution of respondents based on the level of education attained. It can be seen from the results that most of the respondents 75(35.7%) had up to bachelor degree, 62 (29.5%) had up to diploma level, and 52(24.8% had up to certificate level of education and 21 (10.8%) of the respondents had master degree. This revealed that the population under consideration was well informed to give the relevant and informed data (table 4.3) below.

Table 4. 2. Education level of respondents

Education level	Frequency	Percentage (%)
Certificate	52	24.8
Diploma	62	29.5
Bachelor Degree	75	35.7
Master and Above	21	10.0
Total	210	100.0

4.1.2.4 Work Experience

Table 4.4 below shows the distribution of respondents based on the work experience. The most of respondents 69(32.9%) had 4-6 years of experience, 57(27.1%) respondents had 1-3 years of experience, 36(17.13%) of respondent had above 7- 10 years of experience and 35(16.7%) of respondents' experience of more than 11 years. And respondents' experiences of less than1 year are 13(6.2%) (table 4.4).

Table 4. 3. Experience of respondents

Experience	Frequency	Percentage (%)
Less than 1 year	13	6.2
1 - 3 years	57	27.1
4 -6 years	69	32.9
7 - 10 years	36	17.1
More than 11 years	35	16.7
Total	210	100.0

4.1.3 Analysis of questionnaire data

In order to investigate the main effect of digitization on workflow and organizational performance in administrative offices of selected Ethiopian HEIs considered for this study, the closed ended questionnaires were grouped in to effect of digitization on workflow, effect of digitization on organizational performance and challenges of implementing digital technology in administrative offices of HEIs. Accordingly, the following findings were obtained and presented in table 4.4, table 4.5 and table 4.6 respectively.

4.1.3.1 The effect of digitization on workflow

As the result of this study showed in table 4.4, 50.5% of the respondents agreed as by using digitization in workflow save their time with in their organization. On the other hand, about 25.7 percent were neutral and 23.8 percent disagreed. The mean value of the responses is 3.34 with SD. dev, 1.122 which are in the range of agreement, which implies that using digitization in

administration of HEI saved times when compared with the manual one. With regard to satisfaction 54.3 percent of the respondents agreed that using digitization in their workflow satisfied them. However, 30% of the respondents were neutral and 15.3 percent of the respondents disagreed. The mean value of the responses is 3.46 with its Standard deviation 0.983. Regarding to redundancy /Information being entered multiple times in the workflow, 58.1 percent of the respondents agreed and 30.5 percent were neutral. But, 11.4 percent of the respondents disagreed. The mean value of the responses is 3.6, SD. dev 1.027.

With regard to submitting reports in a timely manner 61.9 percent of the respondents agreed as using digitization in their workflow supported them to save their time. But, 22.9 percent of respondents were neutral and 15.2 percent of respondents disagreed. The mean value of the responses is 3.62 and SD. dev is 1.096. Regarding to tedious work 39.6 percent of respondents agreed digitization relieved them from tedious work. However, 32.4 percent of respondents disagreed and 28.1 percent of respondents were neutral. The mean value of responses is 3.10 and standard deviation is 1.128. Most of (50.9%) respondents agreed digitization made them their work was enjoyable. But, 27.1% of respondents were neutral and 21.9 percent of respondents disagreed. The mean value of responses is 3.43 and standard deviation is 1.136.

With regard to reducing complaints of employees and users, 56.6 percent of respondents agreed using digitization with in their workflow reduced the complaints from the employees and customers. However, 23.3 percent of respondents disagreed and 20 percent of respondents were neutral. The mean value of responses is 3.48 and standard deviation is 1.129. Regarding with service delivery 51% of respondents agreed they were given a delivery service for their customers due to using digitization in their workflow. But, 29.6 percent of respondents disagreed and 19.5 percent were neutral. The mean value of responses is 3.34 and standard deviation is 1.258. With regard to decision making process 36.2 percent of respondents agreed. However, 33.3 percent of respondents disagreed and 30.5 percent of respondents were neutral. The mean value of responses is 3.08 and standard deviation is 1.81, (table 4.4) below.

Table 4. 4. Analysis the effect of digitization on workflow

	Item selected as effect of digitization on workflow	Strong agree	Agree	Neutral	Disagree	Strong disagree	Mean value	Standard deviation
	Variables	**5**	**4**	**3**	**2**	**1**		
1	Digitization save more time than the manual in your workflow	14.3%	36.2%	25.7%	17.1%	6.7%	3.34	1.122
2	Digitization enhanced your satisfaction	11.0%	43.8%	30.0%	10.5%	4.8%	3.46	.983
3	Information being entered multiple time is reduced in your workflow	18.6%	39.5%	30.5%	6.2%	5.2%	3.60	1.027
4	Digitization allowed you to submit reports in a timely manner	21.4%	40.5%	22.9%	9.5%	5.7%	3.62	1.096
5	Digitization relieved you from tedious work you were doing before	11.0%	28.6%	28.1%	24.8%	7.6%	3.10	1.128
6	Digitization made your workflow more enjoyable	19.5%	31.4%	27.1%	16.7%	5.2%	3.43	1.136
7	Complaints and recommendation from employees and users are reduced.	19.0%	37.6%	20.0%	19.0%	4.3%	3.48	1.129
8	You give delivery service for users and they are satisfied	21.0%	30.0%	19.5%	21.0%	8.6%	3.34	1.258
9	Your office uses real-time analytics to drive workflow and decision-making process	14.3%	21.9%	30.5%	24.3%	9.0%	3.08	1.181
Average							**3.38**	**1.117**

4.1.3.2 The effect of digitization on organizational performance

As the result of this study showed in table 4.5, the 41.9% of the respondents agreed as errors and time consumed were decreased within their organization due to the using digitization. But, 30 percent of respondents disagreed and 28.1 were neutral. The mean value of responses is 3.12 and standard deviation is 1.175.

With regard to speeding of tasks as well as the improving quality 50% of respondents agreed. However, 25.2% of respondents were neutral and 24.8 percent of respondents disagreed. The mean value of responses is 3.37 and standard deviation is 1.167. Regarding to digitization enhancing efficiency and the productivity of organization, 35.7 percent of respondents agreed. But, 38.1 percent of respondents disagreed and 26.2% of respondents were neutral. The mean value of responses is 2.93 and standard deviation is 1.126.

Regard with digitization increased the productive and efficiency of the employees and 44.2 percent of respondents agreed. But, 29.1% of respondents disagreed and 26.7 percent of respondents were neutral. The mean value of responses is 3.26 and standard deviation is 1.226. With regard to availability of information or records for users to access, most of respondents (37.2%) agreed. As well as the same percent (37.2%) of respondents disagreed and 25.7% of respondents were neutral. The mean value of responses is 2.94 and SD. dev is 1.3 which is in the range of moderate level.

Regarding to ability of to run and execute outputs when needed by user's most of (49.5%) respondents agreed. But, 28.3 percent of respondents were dis agreed and 22.4 percent of respondents were neutral. The mean value of responses is 3.31 and SD. dev is 1.266.

Also 46.2% of respondents agreed with cost of-service provision has gone down in their organization. However, 30.5 percent of respondents disagreed and 23.3 percent of respondents were neutral. The mean value of responses is 3.25 and SD. dv is 1.304. Regard with on time-of-service delivery for user, 40.9 percent of respondents agreed. But, 35.7% of respondents disagreed and 23.3% of respondents were neutral. The mean value of responses is 3.03 and SD. dv is 1.237. With regard to easy to scheduling, notifications, channels among employees and managers in an organization, 41.5% of respondents agreed. However, 37.6% of respondents

disagreed and 21.0% were neutral. The mean value of responses is 3.15 and SD. dv is 1.306 (table 4.5) below.

Table 4. 5. The effect of digitization on organizational performance

	Item selected as effect of digitization on organizational performance	Strong agree	Agree	Neutral	Disagree	Strong disagree	Mean value	Standard Deviation
	Variables	**5**	**4**	**3**	**2**	**1**		
1	Time, that consumed on redundancy, errors is reduced and accuracy of data increased	11.4%	30.5%	28.1%	19.0%	11.0%	3.12	1.175
2	By using digitization, the speed of tasks is improved, as well as the quality is obtained	18.1%	31.9%	25.2%	18.1%	6.7%	3.37	1.167
3	The efficiency and the productivity of your organization is enhanced	6.7%	29.0%	26.2%	27.1%	11.0%	2.93	1.126
4	Digitization helped you to be more productive and enhanced your efficiency	19.0%	25.2%	26.7%	20.5%	8.6%	3.26	1.226
5	Availability of information or records for users when needed	12.9%	24.3%	25.7%	18.6%	18.6%	2.94	1.300
6	Ability to run and execute outputs when needed by users	20.0%	29.5%	22.4%	17.6%	10.5%	3.31	1.266
7	Cost of service provision has gone down	21.0%	25.2%	23.3%	18.6%	11.9%	3.25	1.304
8	On time delivery of user requirements	11.4%	29.5%	23.3%	21.9%	13.8%	3.03	1.237
9	Easy to scheduling, notifications, channels among employees and managers.	21.0%	20.5%	21.0%	27.6%	10.0%	3.15	1.306
	Average						**3.15**	**1.234**

4.1.3.3 Challenges of implementing new digital technology

As the result of this study showed in table 4.6, regard to resistance among employee to accept digital technology, the result of this study showed in table 4.7, the 31.9% of the respondents agreed as resistance to accept digital technology within their organization. But, 40.5 % of respondents disagreed and 27.6% of respondents were neutral. The mean value of responses is 2.89 and standard deviation is 1.238, which implies that to implement digital technologies in offices of administration resistance among employees was low. With regard to lack of training**,** the result showed 39.5% of respondents agreed with inadequate of training in their organization. But, 30 percent of respondents disagreed and 30.5% of respondents were neutral. The mean value of responses is 3.14 and standard deviation is 1.181. This indicates there is lack of training in administrative office of HEIs to implement digital technologies.

With regard to lack of guidelines, 42.4 percent of respondents agreed. But, 33.8 percent of respondents disagreed and 23.8 percent of respondents were neutral. The mean value of responses is 3.08 and SD. dv. is 1.273. It shows lack of guideline is the other challenges of implementing digital technologies in HEIs. Regarding with lack of hardware and software 32.8 percent of respondents agreed. But, 43.8 percent of respondents disagreed and 23.3% were neutral. The mean value of responses is 2.83 and St. is 1.325, which implies that to implement digital technologies with in administration offices of HEIs lack of hardware and software is low. With regard to lack of skilled manpower the most (52.4%) of respondents agreed. However, 26.7% respondents were neutral and 20.9% disagreed. The mean value of responses is 3.49 and St. dv. is 1.207 which implies that to implement digital technologies with in administration offices of HEIs there is lack of manpower. Regard with the interaction between employees and manager within administration offices of HEIs, most percent (49.5%) of respondents agreed and 31.5% of respondents disagreed. But, 19 % of respondents were neutral. The mean value of responses is 3.31 and SD. dv. is 1.318 which indicates to implement digital technologies with in administration offices of HEIs, the interaction between employees and manager is low.

With regard to lack of awareness, 49.5% of respondents agreed. But 28.1% of respondents disagreed and 22.4% of respondents were neutral. The mean value of responses is 3.32 and St.

dv. is 1.334 which indicates to implement digital technologies with in administration offices of HEIs there is lack of awareness in administration of HEIs. Regard to Lack of polices, most of respondents (48.1%) disagreed and 31.4% of respondents were neutral and 20.5% of respondents agreed. The mean value of responses is 2.67 and St. dv. is 1.041 which implies that to implement digital technologies with in administration offices of HEIs lack of polices for digital technologies is low. Regard to System problem, (44.8%) of respondents agreed there is the problem of system. However, 24.3% of respondents disagreed and 31% of respondents were neutral. The mean value of responses is 3.32 and St. dv. is 1.157 which implies that to implement digital technologies with in administration offices of HEIs there is the problem of user friendly and an integrated system.

With regard to lack of Security, (42.4%) respondents disagreed and 30.5% respondents agreed. But, 27.1% of respondents were neutral. The mean value of responses is 2.80 and St. dv. is 1.193 which indicates that to implement digital technologies with in administration offices of HEIs the problem of security is low. Regard with lack of management 42.4% of respondents disagreed. However, 26.6 respondents agreed and 31% of respondents were neutral. The mean value of responses is 2.80 and SD. dv. is 1.165 which indicates that to implement digital technologies with in administration offices of HEIs the problem of management is low. Regarding to lack of storage most of (40.5%) of respondents disagreed. But, 31% respondents were neutral and 28.6% respondents agreed. The mean value of responses is 2.83 and St. dv. is 1.126 which indicates that to implement digital technologies with in administration offices of HEIs lack of storage is low (Table 4.6) below.

Table 4. 6. Challenges of implementing new digital technology

Item selected as challenges of implementing digital technology		Strong agree	Agree	Neutral	Disagree	Strong disagree	Mean	SD.
Variables		**5**	**4**	**3**	**2**	**1**		
1	Resistance among employee to accept digital technology	12.4%	19.5%	27.6%	25.7%	14.8%	2.89	1.238
2	Unavailability of training for employees on digital technologies	14.3%	25.2%	30.5%	20.5%	9.5%	3.14	1.181
3	Lack of guideline to use new digital technologies.	13.8%	28.6%	23.8%	19.0%	14.8%	3.08	1.273
4	Lack of hardware and software	13.3%	19.5%	23.3%	23.3%	20.5%	2.82	1.325
5	Lack of skilled manpower	24.8%	27.6%	26.7%	13.8%	7.1%	3.49	1.207
6	The interaction between employees and manager is very low	23.3%	26.2%	19.0%	21.0%	10.5%	3.31	1.318
7	There is lack of awareness to introduce new digital technology	23.8%	25.7%	22.4%	15.2%	12.9%	3.32	1.334
8	Lack of polices for current digital technologies	5.7%	14.8%	31.4%	37.1%	11.0%	2.67	1.041
9	The system is not user friendly and some requirements not integrated	18.1%	26.7%	31.0%	17.6%	6.7%	3.32	1.157
10	The security of current digital technology is very low	8.1%	22.4%	27.1%	26.2%	16.2%	2.80	1.193
11	Lack of management in an organization	9.5%	17.1%	31.0%	28.6%	13.8%	2.80	1.165
12	Lack of storage for new digital technologies	7.6%	21.0%	31.0%	28.1%	12.4%	2.83	1.126
Average							**3.03**	**1.213**

4.1.4 Inferential statistics

4.1.4.1 Correlation Analysis

A Pearson correlation analysis was used to determine relationships existed between the study variables. The findings show that the effect of digitization to enhance efficiency & productivity in organizational performance in administration office r (0.141, $p < 0.01$); followed by delivery service r (0.138, $p < 0.01$); in time consume reduction r (0.117, $p < 0.01$), redundancy reduction r (0.056; $p < 0.01$) and finally the least was cost waste reduction r (0.019, $p < 0.01$). These were statistically presented in Table 4.7 below:

Table 4. 7. Correlation results of independent variable and dependent variable

	1	2	3	4	5	6
Organizational Performance	1					
Time reduction	0.117	1				
Cost reduction	0.019	0.034	1			
Redundancy reduced	0.056	0.001	0.071	1		
Enhancing efficiency &productive	0.141	0.057	0.061	0.032	1	
Delivery service given	0.138	0.153	0.010	0.054	0.093	1

Where;

N= 210

Table 4.7 presents tests on the correlation between dependent and independent variables where the correlation coefficients for all variables were less than 0.8 meaning that the study data did not reveal extensive multicollinearity because relationships did not exceed the threshold. However, there is the positive linear relationship between the variables.

4.1.4.2 Tests of regression assumptions

Regression is a mechanism used to investigate the effect of one or more predictor variables on an outcome variable. Regression allows us to make statements about how well one or more independent variables will predict the value of a dependent variable.

4.1.4.2.1 Test for normality

Normality was tested using the Shapiro-Wilk test. The Shapiro-Wilk's statistic ranges from zero to one and in case the calculated probability (p-value) is below 0.05, the data notably deviates from normal (Razali, N. M., & Wah, Y. B. , 2011). These results of Shapiro-Wilk test on this study are presented in Table 4.8.

Table 4. 8. Linear regression summary model for the effect of digitization on workflow and organizational performance

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.243[a]	.59	.036	0.557

a. Predictors: (Constant), Delivery service given, Redundancy reduced, enhancing efficiency & productive, Cost saved, Time saved

The findings in Table 4.8 indicate that the variables were significantly correlated where R (coefficient of correlation) was a positive correlation of 0.243 implying that digitization variables were linked to organizational performance. The table shows R Square of 0.59 meaning that the identified dependent variables (time reduction, cost reduction redundancy reduction, productivity and delivery services) explain fifty nine percent (59%) variation in the independent variable. The remaining 41% is explained by other effectives of digitization adopted by HEIs.

4.1.4.2.2 Analysis of variance

The study used ANOVA to establish whether the overall regression model is significant or not (table 4.9)

Table 4. 9. Summary of One-way ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	3.989	5	.798	2.572	.028[b]
	Residual	63.292	204	.310		
	Total	67.281	209			

a. Dependent Variable: organizational performance

b. Predictors: (Constant), Delivery service given, Redundancy reduced, enhancing productive, Cost reduced, Time saved.

From table 4.9 above, the study of ANOVA revealed the presence of a significant relationship between the combined study variables, F = 2.572; p value = .028; This is demonstrated by low F-values (2.572) and low p values (0.028) which are less than 5% level of significance. This indicates that the regression model is statistically significant in predicting the effects of digitization on workflow and organizational performance in administrative offices of HEIs. Hence, basing the confidence level at 95% the analysis indicates high reliability of the results obtained from the analysis in that dependent variable is largely determined by the independent variables. This implies that holding all other factors constant a unit increase in the variable obtained in the regression model results into a corresponding increase in performance

Table 4. 10. Co-efficient of determination

Coefficients[a]					
	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
Constant	2.247	.228		9.873	.000
Time saved	.111	.058	.133	1.897	.059
Cost saved	.071	.071	.068	.992	.322
Redundancy reduced	.039	.083	.031	.461	.645
Enhancing efficiency & productivity	.162	.078	.141	2.063	.040
Delivery service given	.130	.086	.105	1.508	.133

a. dependent Variable: Organizational performance

The regression coefficients on table 4.10 indicates that a positive relationship and moderate effect of digitization on workflow and organizational performance in administrative offices of HEIs. As showed in table above, revealed that when the variables were combined, enhancing efficiency and productivity had the high regression coefficient with a beta value β (0.162); p value = 0.04; followed by delivery service coefficient with beta value β (0.13), p = 0.133, followed by time saved coefficient with a beta value β (0.111); p value = 0.059; followed by cost saved coefficient with a beta value β (0.071); p value = 0.322 and finally redundancy reduction coefficient with a beta value β (0.039); p value = 0.645. The regression analysis table shows that all the regressors had a positive impact on organizational performance additionally, all independent variables were significant.

The regression equation below shows that for a 1- point rise in the effect of digitization on workflow and organizational performance, in HEIs rises by 2.247

$Y = \beta 0 + \beta X_1 + \beta X_2 + \beta X_3 + \epsilon$

Y= organizational performance

2.247 =Constant term

X1= time saved

0.111 = Coefficient of X1

X2= cost saved

0.071 = Coefficient of X2

x3 =Repetitive reduced

0.039= Coefficient of X3

X4= Enhancing efficiency & productivity

0.162 = Coefficient of X4

X5= Delivery service given

0.130= coefficient of x5

ϵ = Residual (error term 0.05)

From on the coefficients of regression above, it can be presumed that performance of administration offices of Ethiopian HEIs was effect by digitization in terms of enhancing efficiency and productivity, delivery service, time saving, cost saving and redundancy reduction respectively.

4.1.4.3 Qualitative data analysis

The researcher interviewed with 15 respondents came from administrative of the three universities, among them 5 respondents were selected from mangers and 10 respondents were from support staff (ICT). The result of interview shows that the administration offices are working to achieve the Universities' performance and goal to respective the effectiveness and competitiveness. Universities are practicing the digitization in works of administration offices of HEIs. Digitization is essential for the effective of work flow and organizational performance in Higher Education Institutions. This qualitative data analysis was considered on the interview given to the respondents came from the selected universities. Their answer was written as in form of summarized and combined together. Because, the given questions have synonyms and their answers were also having relationship. Therefore, the questions and the answers as well as the suggestion of respondents were written as follows.

On the question given for Managers from the selected universities, what are the activities of digitization look like in your office and its effectives on workflow and organizational performance? The managers of administration offices said that, “There are activities performed in our organization for the purpose of work flow and organizational performance.” Digitization has changed the way to do the works, in means of speeding tasks, reducing repetitions, enhancing satisfaction, saving cost, increasing quality, increasing efficiency and productivity and saving times with providing opportunities to staffs.”

The other question for managers came from the (3) universities were, what is the challenges to implementing new digital technologies in your office to perform workflow? The respondents said that “there are challenges such as, lack of skilled man power, lack of training, inadequacy of attention, lack of guidelines and policies are the main challenges of implementing new digital technologies in administration offices of HEIs.” What kind of opportunities you have gained by using digitization on workflow and performance in your office? They were said that “Digitization and new technology create new opportunities for our organization; it changes the structure of the organization and its decision-making process. Also makes employees and their competencies shift a significant to efficiency and productivity.” “Also helps us to change our tasks from tedious to simplified and enjoyable, support as to give delivery services for users, and enhances transparency of information through the offices.”

The other question given to mangers was, is your institution benefited from digitization regarding to effective and efficiency of organizational performance? The answer of all respondents came from the selected universities is “yes” They said “One of the reasons, to utilize digitization in an institution is speedup tasks, improving the quality, giving the delivery services, enhancing the productivity and to become effective and efficiency. Therefore, our organization has benefited from digitization in terms of cost waste reduction, time consume reduction, redundancy reduction while performing tasks, errors occur reduction, increasing employees and customer satisfaction.” Question regarding with policy and strategy, what kind of strategy or police did you use for new digital technologies? The respondents said that “There is no a clear guideline, polices or strategies for new digital technologies. So, the policy makers, ICT professionals and higher education institutions should be considered it”

The question given to support staff (ICT professionals) from the selected universities was what is the intention of introducing digital technologies in your institution? They were said that, "New digital technologies have the power to change an organization from paper-based works to digital." Universities are adopting digitization in workflow of offices to improve the tasks and to became effective." But, in administration offices of HEIs there are challenges of implementing new digital technologies, such as lack of attention among institutions itself and the managers of offices, lack of skill personnel, security vulnerabilities and training."

Regard to training asked, do you give training on how to use digital technologies for employee? ICT professionals said that we have given some short-term training for some employees, but is not enough because it doesn't distribute to all staff members due to insufficient financial support. However, for future we have training plan, to participate all employees."

The other question for support staff were how employee perception towards introduced digital technologies in their workplace? They were said, "Employees have trust to do their works with digitization and they were satisfied." However, there are factors influence inadequacy of teamwork, lack of decision making, information sharing practices."

Also, the researcher was asked respondents from the ICT, do you think are there factors effective to solve the challenges of digitization and implementing digital technologies in administration offices of HEIs? They said that "Making awareness, giving training, giving attention for digital technologies and digitization among managers and universities, decision making with employees, making a clear guidelines and policies with policy makers and ICT professionals."

Generally, the answers given from the respondents were showed that the significance of digitization is crucial for organization of HEIs, especially in the main offices such as human resource, finance, registrar office, and transport office. Because, those offices are the core of the others offices and departments as well as in the whole process. The status of digitization in the selected three universities is very well. However, the usage is different from one another, depending on their experience and human power they have. Jimma University is more benefited by adopting and practice of digitization than WOU and MeU. Also, Jimma University was known among them by sharing the knowledge of using digital technologies. For example, Mettu

University had taken, SRS and e-learning technologies from JU. From the selected three universities of administrative offices the transport office was very low adaptation of digitization. Because, there is lack of attention among the institutions of HEIs. Among the three universities WOU is better usage of digitization in office of transport.

Regard to challenges of implementing digital technologies in Ethiopian HEIs, in selected area there is similar challenges. Lack of training, lack of awareness, lack of attention, lack of clear guidelines and polices, lack of skilled manpower, low interaction between managers and employees are the main challenges of digitization in administrative offices of HEIs.

4.2 Discussion

The aim of the present study was to investigate the investigating the effect of digitization on work flow and organizational performance in selected Ethiopian Higher Education Institutions. As a result, this section presented the discussion of the research.

4.2. 1 The Effect of Digitization on Workflow

The descriptive analysis revealed that digitization has a positive effect on workflow in terms of cost and time reduction and redundancy reduction in administration offices of HEIs. The finding was consistent with (Sabai & Theresa, 2018)investigated that the role of digitization is linked with organization work performance in which rapid change of digitization was enabling an organization to do their tasks effectively and efficiently. Most of (50.5%) of respondents agreed using digitization in workflow saved their time. As well as 54.3% of respondents agreed that they were satisfied by adopting digitization in their workflow. Regard to speedup the tasks 61.9% of respondents agreed, digitization helped them to prepare and send their report in time manner. The study showed that 56.6% of respondents agreed, using digitization within their workflow support them to reduce complaints from clients. The previous study supported this finding was digitization or digital technology has impact on works and its relationship with organizational performance in public services (Kariuki, 2015). The inferential statistics showed that digitization effective (average of 51.1%) on workflow of administration offices of HEIs.

This indicates that utilization of digitization has an important influence on workflow of administration offices of HEIs.

Qualitative analysis showed that digitization has helped to do the works, by speeding tasks, reducing repetitions, enhancing satisfaction, saving cost, increasing quality, increasing efficiency and productivity and saving times with providing opportunities to administrative offices. Also, the adoption of digitization allowed them relieved them from tedious to simplified and enjoyable, give delivery services for users, and increased the transparency of knowledge through the offices. Digitization offers new and better services that are easy to use, efficient, and reliable. But there were the main challenges of digitization to perform tasks effectively in workflow, such as lack of training, lack of awareness, lack of guideline, lack of teamwork and lack of skilled personnel. Generally, inferential statistics showed that using of digitization in workflow has significant positive effective on time, cost and redundancy reduction as well as increase service delivery, efficiency and productivity. Regard with the effective of digitization on workflow among administration offices of HEIs, the selected offices are effective. However, transport offices of JU and MeU were limited uses of digitization in their workflow. But transport office of WOU was more effective of using digitization in workflow than others.

4.2.2 Organizational Performance

The descriptive analysis revealed that digitization has the positive effect on organizational performance in terms of time, cost and redundancy reduction, enhance service delivery, efficiency and productivity. The result linked with (Mccue and Roman, 2012) organization performance has been impacted by technology to reducing costs, efficient processes, contract compliance and reduce times. Changes in organizational performance consider reduction in the duration taken in processing critical tasks and elimination of repetitive tasks resulting in higher productivity and efficiency as well as better and quality service delivery (Barney et al., 200).

Regression analysis showed that the individual factors: efficiency & productivity is the significant predictor for organizational performance (B=.162, $p < 05$) and delivery service given is for organizational performance, (B=.130, $P < 05$), time saving (B=.111, p=05), cost saved coefficient with a beta value β (0.071); $p<05$) and finally redundancy reduction coefficient with a beta value β (0.039); $p> 0.5$). The regression analysis table shows that all the regressions had a

positive impact on organizational performance additionally; all independent variables were significantly correlated to the effect of digitization in the significance level of 95% in this study. Individual factors were up to 59% and 24% of the total variance, in the effect of digitization (R^2=.59) and organizational performance (R^2=.243) respectively. Also, the result showed that, the positive effect of digitization on organizational performance of HEIs is (average of 43.01%). That is, it effective on efficiency, productive and delivery service in Higher Education Institution.

The qualitative analysis revealed that, organizational performance of the three universities were effective. However, their performance was different, due to human capacity and skilled human power they have, experience and interest to implement digital technologies. According to effective use of digitization on organizational performance JU, WOU and MeU respectively. That indicates among the three universities JU was more effective and WOU was the second and MeU was the last effective in organizational performance in their institution.

4.2.3 Challenges of Implementing New Digital Technologies

Regarding with challenges of implementing new digital technologies, the study found that the most of the respondents had responded lack of skilled man power (52.4%), lack of awareness (49.5%), lack of the interaction between managers and employees (49.5%), lack of polices (48.1), system problem (44.8%), lack of guidelines 42.4 percent and lack of training 39.5%, are the main barriers of implementing digital technologies in administration of HEIs. The mean values (3.49), (3.31), (3.32), (2.67), (3.14), (3.08), (3.32) for inadequate skilled manpower, low in interaction between managers and employees, lack of awareness, inadequate of training, lack of polices, lack of guidelines, and system problem respectively. The study findings are in line with Getachew, *et al.*, (2010) lack of proper standard guidelines in digitization and lack of awareness are the challenges of digitization. Qualitative analysis showed that, in administration offices of HEIs there are challenges of implementing new digital technologies, such as lack of attention from organization and mangers, lack of skill personnel, security vulnerabilities and training. Regarding to implementing new digital technologies in administrative of selected universities there was feeling and had a plan to implement more digital technologies in their

institution. Therefore, HEIs should be implement advanced technologies to be more effective by using digitization in workflow and organizational performance.

4.3. The proposed framework of the study

A developed framework is discussed as a set of wide ideas taken from relevant fields of analysis and used to structure a subsequent presentation. This developed framework has potential usefulness as a tool to support research and to assist a researcher to make meaning of subsequent findings. As the digitization relates to individuals and relations between individuals in an organization as well as a supportive staff and managerial involvement, workflow, organizational performance and structure framework need to enhance organizational performance and its effectiveness.

This study adopts an integrated perspective of different variables. It integrates the effect of digitization on workflow, organizational performance and effectiveness in single model. The developed framework is based on reviewed theoretical, discussions presented in the literature review and findings of the study. It presents the researcher's schematic drawing of the study variables and shows how the study has been through out. The proposed framework came after the current result and improvement suggestion of the respondents using this for solving the problem that is found in the effect of digitization on workflow and organizational performance. From the result of the study digitization effect on both workflow and organizational performance in terms of time, cost, redundancy reduction as well as delivery service and productive in administrative offices of HEIs. Also, as the result indicates lack of training, lack of awareness, lack of a clear guidelines and polices, skilled manpower are the challenges of implementing the new digital technologies in administrative offices of HEIs. Thus, the current research was used such findings and attempted to propose a framework for the effect of digitization on workflow and organizational performance in administrative offices of HEIs and for the challenges of implementing new digital technologies.

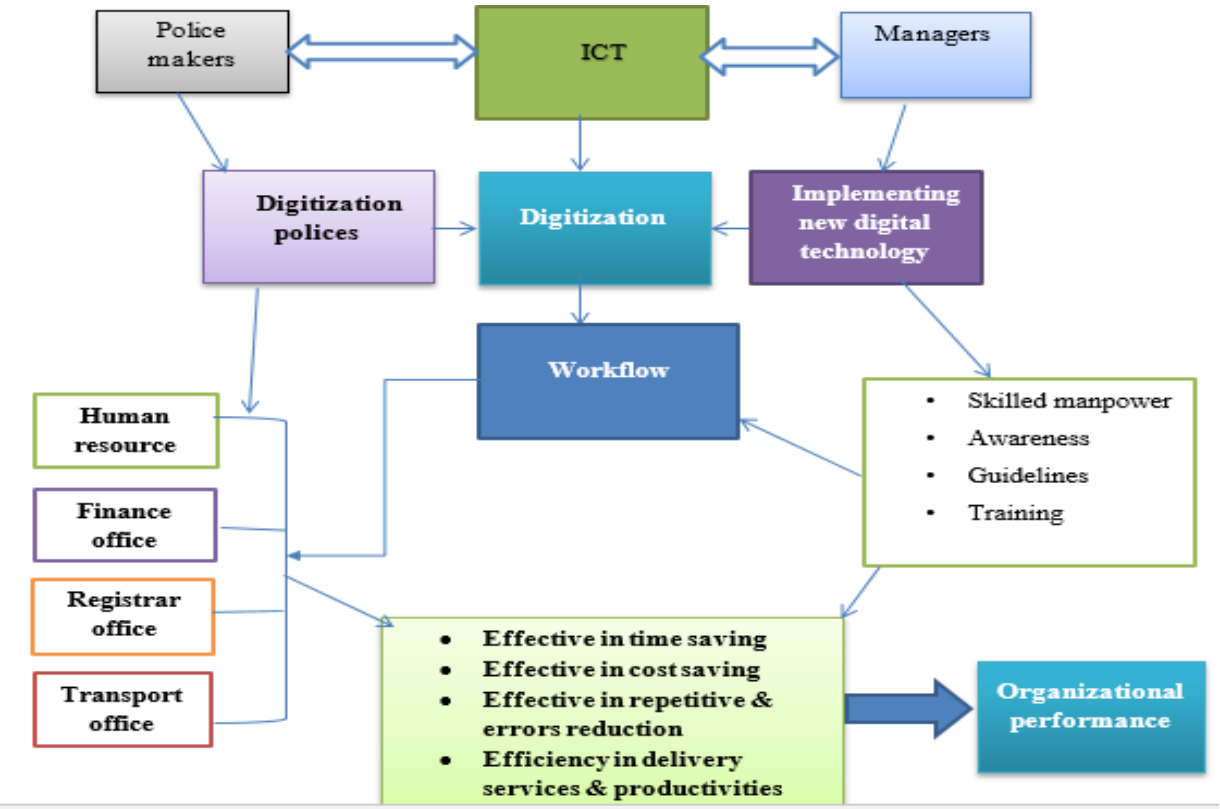

Figure 4.3 The proposed framework for factors that affects the effectiveness of digitization in administrative offices of HEIs

Key:

ICT: Information and communication technologies have become key instruments and it is the main factor that affects the effectiveness of digitization in organization to change both employees and organization. It allows administrators of HEIs to use software and digital tools in digitization or automating various tasks, including human resources management, registrar system, finance and transport. Information and Communication Technology reduces the need for time waste, cost waste and redundancy. If HEIs to be digitized it should be utilizing ICT and facilitating its infrastructure in an institution as well as in administrative offices.

Policy makers: It is factor that affects the effectiveness of digitization in HEIs and it well contributes to plan and make digitization policy for organizations. Policy makers provide

solutions to each problem and making the policy through the goals of the institutions. To be effective in digitization, decision making and enhancing the participating of Policy makers is the essential.

Managers: Managers have a key role to play in an organization, announcing and implementing digital technologies for the adopting digitization. To running the organization their role is planning, organizing, staffing, directing and controlling. They provide their team with the means to understand and adopt their work accordingly. Implementing new digital technologies at the organization as well as offices level is the managers' responsibility. Regarding to digitization, managers should support and encourage training, enhancing awareness and make interaction among employees.

Digitization policy: It is the other factor that affects the effectiveness of digitization in HEIs. Digitization policy is intended to guide the digitization in administrative offices as well as provide information to potential collaboration partners in HEIs.

Implementing new digital technology: Implementing new technology has advantages to increase in productivity, efficiency, employee engagement, speeding up tasks and effective in workflow and organizational performance. It offers the opportunity to use digitization in organization. Therefore, organization should implement new digital technologies to be effective in digitization in the workflow and organization performance.

Digitization: Digitization has role in organization in many ways which leads to the workflows and success of the organization. It allows the administrative offices to reduces time, cost, redundancy, increase in service delivery, enhance efficiency and productive.

Workflow: Work flow is consisting of the set of processes it must accomplish, the set of individuals or different resources offered to perform those processes. When workflows in offices of HEIs adopts digitization, it is effective in terms cost, time, efficiency, productivity and effective in organizational performance.

Organizational performance: Organizational performance is the ability of an organization to achieve its mission. Regarding to digitization in offices organization performance is viewed as a performance that reaches the effectiveness in terms of cost, time, service delivery, productivity, efficiency, competitiveness and achieving their goals in organization. To be effective in organizational performance HEIs should be adopting digitization and implement new digital technologies with in workflow of administrative offices. They should be enhancing awareness, making a guideline, giving training for employees, as well as increase interaction among employees and managers. Also, HEIs should participate and making team work with ICT, policy makers and managers to be effective in both workflow and organizational performance.

Chapter Five

5. Conclusion and Recommendations

5.1 Conclusion

From the study findings, the following conclusions are made. First, digitization practices in administration offices of HEIs (such as human resources, finance, registrar, and transport) reach a good stage. However, there are some important practices that are not involved to a great extent in HEIs which may compromise the success of administration offices. These include lack of training, lack of skill man power, lack of awareness, lack of guidelines, the lack of interaction between managers and employees and system problems. Regarding to the effective of digitization on organizational performance among the selected universities were effective in some offices (HR, registrar and finance). But, in transport office there is a little use of digitization in their workflow, due to lack of new digital technologies.

The study confirmed that there exists a positive relationship between digitization and workflow as well as organizational performance. This was evident from use of digitization in administration offices (human resources, transport, finance registrar) of higher education institution variables analyzed: time, cost and redundancy reduction and enhancing employees and client satisfaction, efficiency, giving delivery services. In human resource of selected Universities, the practices of digitization are better. Regarding to workflow Jimma and Wollega universities were more effective. But, in Mettu University human resource is less effective, because they not fully used human resource management system. With regard to organizational performance, three universities are effective. However, according to their experience of using digitization JU and Wollega Universities were more effective than MeU.

Secondly, the study concludes that the status of digitization practices in finance office of the study areas were best. However, there are challenges that faced to implementing new digital technologies such as inadequate skill manpower, lack of interaction between managers and employees, inadequate awareness, lack of training, inadequate guidelines, and system problem

are challenges which hinder effective digitization in administration offices of HEIs. Lastly, the use of digitization has enabled them to reduced cost and time consumed, speedup tasks, reduce errors and redundancy, enhance satisfaction. Also, digitization enabled them to for organizational performance.

5.2 Recommendations

From the above conclusion, the researcher recommended that the selected Ethiopian Higher Education Institutions should emphasize on digitization to be effective and in order to have better workflow and organizational performance in administrative offices.

The digitalization of HEI is the transformative process that sustainability impacts all activities of higher education institutions. It is therefore used to make effective in reduction of time taken in processing tasks and elimination of redundancy tasks resulting in higher productivity and efficiency as well as better and delivery service.

The study recommends that for faster adoption of digitization by administration offices of HEIs have to implement new digital technologies to be effective in their workflow and organizational performance. Because implementing of new digital technology in an organization supports the organizational strategy of efficiency and flexibility to enhance organizational performance.

Policy makers and decision makers in higher education institutions need to embrace and shape digitization. Policies, plans and strategies are needed to shape digitization for the common good. New challenges and risks must be managed through active policy engagement. Policymakers are encouraged to invest in higher education institution. HEIs and ICT professionals should lay down the clear guidelines for the use of digitization in administration offices.

The managers in admiration offices have responsibility to play a major role in the implementation of the integration of digital technologies in Higher Education Institutions. The study identified the awareness of managers and their interaction between employees is one of the challenges for implementing digital technologies in administration offices of HEIs. Therefore, they should make awareness and enhance the interaction with employees for decision making for digitization in administration office.

Higher education institutions should be place to consider and even practice future implementing new digital technologies transform, which can truly harness the benefits of digitization for all. Support from ICT is crucial in this endeavor. Higher Education Institutions have responsible for hiring skilled personnel, strengthening interaction between managers and employees, making awareness, giving training, making clear guidelines, and reducing system problem to reduce challenges and to obtain effective and efficiency in organizational performance.

Employees should be empowered to be skilled and efficient in carrying out tasks by adopting new digital technologies. The study also recommends further research be undertaken to the impact of integrated digital technologies on employees and on organizational performance in HEIs.

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Appendix

A. Questionnaire

This of the questionnaire is designed to collect information requiring the effect of digitization organization works on organization performance in Higher Education Institutions.

Dear respondents:

I am a student at Jimma University pursuing a Masters in Information Science (Electronic and Digital Resource Management). This study is conducted in partial fulfillment of the requirement for M.Sc. degree in Information Science. The researcher requests you to answer the question truly all information you provide will be kept confidential and will not be used for other purposes except for intended research purposes. So, please answer the question as honestly and objectively as possible**.**

Thank you

Shibiru Terefe

Part I Personnel Information: please provide some information about yourself and your organization by putting a tick mark in the provided box.

Name of your institution: _____ your office: _____

1. **Gender:** Male [ ] Female [ ]

2. **Age:** 18-25 [ ] 26 -33 [ ] 34-41 [ ] 42-49 [ ]
   Above 50 [ ]
3. **Status of education:** Certificate [ ] Diploma [ ] First degree [ ] Master and above [ ]

Work experience: Less than one year [ ] one- three year [ ] Three - six year [ ] seven- ten six year [ ] More than 11 year [ ]

From questions 1 –32, a tick under the number that best indicates your opinion on the question by using the following scales:

1- Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly Agree

S/n	**Part II. Question fom1-10, focused on identifying the effect of digitization on workflow**	1	2	3	4	5
1	Digitization save more time than the manual in your workflow					
2	Digitization enhanced your job satisfaction					
3	Information being entered multiple time is reduced in your workflow					
4	Digitization allowed you to submit reports in a timely manner.					
5	Digitization relieved you from tedious work you were doing before					
6	Information being entered multiple time is reduced in workflow					
7	Digitization made your workflow more enjoyable					
8	Complaints and recommendation from employees and users are reduced.					
9	You give delivery service for users and they are satisfied					
10	Your office uses real-time analytics to drive workflow and decision-making process					
S/n	**Part III. Questions from 10_18 focused on identifying the effect of digitization on organizational performance**					
10	Time, that consumed on redundancy, errors is reduced and accuracy of data increased					
11	By using digitization, the speed of tasks is improved, as well as the quality is					

	obtained					
12	The efficiency and the productivity of employees is enhanced					
13	Digitization helped me to be more productive and enhanced my efficiency					
14	Availability of information or records for users when needed					
15	Ability to run and execute outputs when needed by users					
16	Cost of service provision has gone down					
17	On time delivery of user requirements					
18	Easy to scheduling, notifications, channels among employees and managers.					
S/n	**Part IV. Questions from 19_25 focused on identifying the challenges of implementing digital technology**	**1**	**2**	**3**	**4**	**5**
19	Resistance among employee to accept digital technology.					
20	Unavailability of training for employees on digital technologies					
21	Lack of guideline to use new digital technologies.					
22	Lack of hardware and software					
23	Lack of skilled manpower					
24	The interaction between employees and manager is very low					
25	There is lack of awareness to introduce new digital technology					

Thank you for giving your time!

B. Interview Questions

The purpose of this interview is to gather information from administrative offices of JU, MeU, and WOU on the effect of digitization works on organizational performance. The information collected will be used strictly for academic purposes only and will be treated with utmost confidence. Your views and opinions will assist the researcher to come up with useful information on the effect of digitization workflow and organizational performance.

For support staff/ICT

1. What is the intention of introducing digital technologies in your institution?
2. How employee perception towards introduced digital technologies in their workplace?
3. Is there any difficult situation to adopt digital technologies in your Institution?
4. How is resistance to new technology handled in your organization?
5. Do you give training on how to use digital technologies for employee?
6. Do you think is their challenges on the effective digitization on workflow and organizational performance?
7. What factors do you think are effective to solve the challenge of digitization or implementing digital technologies?

For managers

1. Are digitization changes or digital technologies affecting the ways of workflow in your office?
2. Have you saved cost and time regarding to using digitization or using digital technologies in your office?
3. What are the challenges you faced with current digital technologies introduced in your Institution?
4. What kind of opportunities you have gained by using digitization workflow in your office?
5. Is productivity and quality of processes improved in your office?

6. Are digitization or digital technologies changes toward it affecting organizational performances?
7. What are the main challenges to implement new digital technologies?
8. What strategy or police did you use for new digital technologies?
9. Is your institution benefited from digitization regarding to effective and efficiency of organizational performance? If so how? If not why not?
10. What are the positive effects of digitization on workflow in your organization/in terms of time, cost, redundancy, satisfaction, speed, errors, etc.?
11. What about the negative ones?
12. What are the positive effects of digitization on organizational performance in your institution/in terms of time, cost, redundancy, satisfaction, speed, errors, etc.?
13. What about the negative ones?

Thank you for giving me the time!