

EFFECT OF TECHNOLOGICAL INNOVATION ON ORGANISATIONAL
PERFORMANCE IN THE CASE OF ADAMA DEVELOPMENT PLC
NAZMED MEDICAL TEXTILES



EYUOEL H/MICHAEL DEMISSE

A THESIS SUBMITTED TO THE DEPARTMENT OF TECHNOLOGY AND
INNOVATION MANAGEMENT, SCHOOL OF HUMANITY AND SOCIAL
SCIENCE

PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR
THE DEGREE OF MASTER'S IN TECHNOLOGY AND INNOVATION
MANAGEMENT

OFFICE OF GRADUATE STUDIES
ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY

JUNE, 2024
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Declaration

I hereby declare that this Master Thesis entitled “Effect of Technological innovation on organizational performance in the case of Adama development P.LC Nazmed medical textiles” is my original work. That is, it has not been submitted for the award of any academic degree, diploma or certificate in any other university. All sources of materials that are used for this thesis have been duly acknowledged through citation

Name of the student

Signature

Date

Recommendation

I/we, the advisor(s) of this thesis, hereby certify that I/we have read the revised version of the thesis entitled “Effect of Technological innovation on organizational performance in the case of Adama development P.LC Nazmed medical textiles” prepared under my/our guidance by Eyuoel Hailemichael Demisse submitted in partial fulfillment of the requirements for the degree of Master’s of Science in technology and innovation management Therefore, I/we recommend the submission of revised version of the thesis to the department following the applicable procedures.

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I/we, the advisors of the thesis entitled “Effect of Technological innovation on organizational performance in the case of Adama development P.LC Nazmed medical textile” and developed by Eyuoel Hailemichael Demisse , hereby certify that the recommendation and suggestions made by the board of examiners are appropriately incorporated into the final version of the thesis.

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We, the undersigned, members of the Board of Examiners of the thesis by Eyuoel Hailemichael Demisse have read and evaluated the thesis entitled “Effect of Technological innovation on organizational performance in the case of Adama development P.LC Nazmed medical textile” and examined the candidate during open defense. This is, therefore, to certify that the thesis is accepted for partial fulfillment of the requirement of the degree of Master of Science in technology and innovation management.

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Final approval and acceptance of the thesis is contingent upon submission of its final copy to the Office of Postgraduate Studies (OPGS) through the Department Graduate Council (DGC) and School Graduate Committee (SGC).

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ABBREVIATIONS AND ACRONYMS

ADPLC	Adama Development private limited company
EDI	Electronic Data Interchange
ICT	Information, Communication and Technology
IT	Information Technology
NMT	Nazmed Medical Textile
RBV	Resource Based View
SPSS	Statistical package for Social science
TAM	Technology Acceptance Model

ABSTRACT

The purpose of this study was to investigate the effect of technological innovations on the organizational performance of ADPLC Nazmed medical textiles. The study was focused on four independent factors namely system development enhancement, digital tools in support of daily activities, information technology-based innovations and interdepartmental process integration. The study adopted both explanatory and descriptive type research designs and mixed research approaches. This study used a census survey of all managerial level permanent employees who works in ADPLC NMTS. Sampling frame of the study was a list of all those manager level employees who works in ADPLC NMTS. The data in the study were collected from 40 managerial level permanent employees who work in ADPLC NMTS who are relevant to the study. The collected data were analyzed using descriptive and inferential statistics with the aid of SPSS version 26. Multiple linear regression models were used to explain the nature of the relationship between dependent and independent factors in the study. The reliability coefficient of 0.800 was computed using Cronbach Alpha formula to measure the internal consistency of the entire questionnaire items. The results of the study suggest that all variables have a significant relationship with organizational performance. The regression analysis result of the study indicated that 91.5% of the variation on the organizational performance can be explained by the composite measure of system development, digital tools and services, information technology-based innovations and interdepartmental process integrations. The study recommended that ADPLC Nazmed medical textiles should effectively implement the determinants such as system development, digital tools and services, information technology-based innovations and interdepartmental process integrations to increase and improve organizational performance.

Keywords: Technological innovation, Organizational Performa

CHAPTER ONE

1.1. Background of the Study

Technology and innovation were two important elements in improving efficiency, productivity and competitiveness in organizations. In a globally competitive environment that is constantly changing, the inability of established firms to come up with breakthrough technological innovations that will help them operate effectively is a truism today (Davila, 2014). Technological innovation is part of strategy implementation that enhances organization performance through increased expansion and reduced risks (Drucker, 2001). Advancement techniques are key in enhanced execution among numerous organizations and are reflected by expanded productivity and overall industry development (Palmer & Kaplan, 2007). Yilmaz, Alpkan and Ergun (2005) also recognize technological innovations as critical enablers for organization's performance by creating value in the undeniably, unpredictable and quickly evolving environment.

This study's theoretical foundation leans on the Resource Based View (RBV) theory of the firm, Technology Acceptance model (TAM) and diffusion of innovation theory. According to the RBV theory of the firm, performance is centered on how the resources and capabilities controlled by a firm enable it to acquire competitive advantage edge. TAM clarifies the way clients embrace and make use of an innovative idea. It influences the perceived usefulness and the intention for adoption (Davis, 1989). TAM is applied in this study to establish how technology acceptance influences technological innovations in ADPLC NMT. Diffusion of Innovation refers to the communication of an idea which is considered to be novel to the members of a social system through certain preferred channels (Rogers, 2003). Innovations have to gain acceptability in a wide area in order to be sustainable. This theory has guided the study of the adoption of various technological innovations in business.

Innovation is the process through which an invention or idea is translated into a service or good which creates value (Kantor, 2001). With regard to this study, the term innovation only

implies to technological innovation and not any other innovation type. From the many definitions, technological innovation refers to the scientific and system based process. The process has several influencing factors that affect or are influenced by the internal strengths of the firm which are its technological learning ability and networking capabilities within the external environment. It would harness the existing resources and expand the firm's innovation prospects with the result being the production of advanced or much better goods and services or the process of production itself (Goh, 2002).

According to Tushman and Nadler (2006), mechanical development is an innovative and novel process which empowers the formation of new techniques, products and ventures in an association. As indicated by Lyytinen and Rose (2003) there are four classifications of mechanical advancements. These are: System improvement upgrade, this entails re-adjustments of the involved team in development; goods and services which are a result of the process of development that involve utilization of digital tools and services in the execution of the daily operational activities of the organization; information technology based innovations, which is a new capacity of computing and technology; interdepartmental process integration which involve integration of processes across all the departments.

Richard, Devinney, Johnson and Yip (2009) defined organizational performance as fulfillment of the intended mission of the organization which is obtained through good management, persistent efforts and superior governance in order to achieve goals. The multiple performance criteria for nonprofit organizations include responsiveness, flexibility, cost, productivity, asset efficiency utilization and reliability (Chang, Tsui, & Hsu, 2013). An organization's performance is centered on the kind of activities that it carries out in fulfillment of its mission. End results are the observable aspects that determine an organization's performance (Valmohammadi & Servati, 2011). Some other frequent performance measures include productivity, market share, profitability, growth, competitive position and stakeholder satisfaction (Kantor, 2001).

The association between performance and technological innovation has been a subject of interest to many researchers and policy makers. Positive relationships between performance and technological innovation have been reported in recent studies (Loof & Heshmatt, 2013). Performance was measured using sales and export revenues, return of assets and productivity.

These were measured in relation to sell of new products by their employees, employee growth and operating profit. A positive link between innovation output and growth in sales was found but no evidence that relates technological innovation output and employee growth (Klomp & Leeuwen 2011). The mode of foreign technology procurement also determines the firm's innovative capacity and performance. Nevertheless, acquiring external technology alone is not enough to increase productivity. It needs to be changed, modified, improved and conceptualized locally to promote innovation. In this regard, empirical evidence (Wakeford et al. 2017; Oqubay 2018; UNDP, 2018; Chebo and Wubatie 2020) confirms that the Ethiopian manufacturing sector is characterized by low technological know-how, a shortage of skilled labour, a lack of industry knowledge, a low rate of technological products and innovation, weak inter-and intra-sectoral linkages, and weak links with universities and research institutions. In addition, the World Economic Forum's (2019) Global Competitiveness Index report ranked Ethiopia 126th out of 141 economies, suggesting that the sector needs enormous structural changes in terms of technological capacity, innovation, organizational learning, leadership, and corporate governance in order to be competitive both in national and international markets.

Adama Development PLC is located in Oromia Regional State, Adama city, Keble 05, about 100km away from the capital city Addis Ababa, Ethiopia. The company was established in August, 2008 with an initial capital of Birr 160 million, from which 70% covered by bank loan and 30% by owner Equity having yarn spinning mill under it. Expansion project was implemented in 2011/2012 budget year with an additional investment of Birr 115 million. In order to produce a value added products by utilizing partially the spinning mill yarn products as an input, the company implemented Nazmed medical textiles factory expansion project in the 2020/2021 budget year with the investment capital of birr 158.6 million from which, 60% was covered by bank loan and 40% owners' equity. Currently, the total capital of the company has reached Birr 580 million.

The company is a modern textiles factory' in Ethiopia equipped with latest technology of spinning machineries from Reiter and air conditioning unite from Switzerland and latest technology of Nazmed medical textiles machineries from chain. The installed technology produces high quality 100 % cotton carded and combed yarn of different counts, socks,

Surgical Gauze, Rolled Bandage and Gauze swabs for export and local market. Nowadays ADPLC Nazmed medical textiles have 600 employees. The technological innovations contribute heavily in meeting their mandate as well as enhancing their efficiency and effectiveness which results to influence on their overall performance (Ochieng, 2009). Besides, this study inspected to what extent the technological innovations activities build to improve organizational performance.

1.2. Statement of the Problem

A key assumption of most research work done on the improvement of operations has been technological innovations are directly proportional to improvements in performance (Upton & Kim, 1999). The process of technological innovation and implementation forms a critical part in the growth of many nations. A change of past techniques and adoption of local technology similar to that of more advanced industrialized nations lead to indigenous technological innovations (Roehm & Sternthal, 2001). The current study sought to determine if indeed adoption of technological innovations among ADPLC NMTS in Ethiopia which is a developing country has a significant influence on performance.

Despite the potential benefits of technological innovations, there is debate about whether and how their adoption improves organizational performance (Mabrouk & Mamoghli, 2010). Worch and Truffer (2012) found that the firm's general productive capacity and ability to maximize its value is enhanced by operations innovation. A study by Hafeez (2013) found that there was positive relationship between companies' profitability and value added innovativeness.

Most previous studies conducted on technological innovations have concentrated on developed nations public sectors (Worch & Truffer, 2012; Hafeez, 2013). The few studies conducted developing nations, have not been exhaustive as they have dealt with some aspects of innovations and different contexts (Kiraka, Kobia, & Katwalo, 2013; Odhiambo, 2008; Kiiyuru, 2014). (Mutie, 2018) suggested that effect of technological innovations on organizational performance study be conducted but focusing on the private sector. According to empirical evidence of (Wakeford et al. 2017; Oqubay 2018; UNDP, 2018; Chebo and Wubatie 2020) confirms that the Ethiopian manufacturing sector is characterized by low technological know-how, a shortage of skilled labour, a lack of industry knowledge, a low rate

of technological products and innovation, weak inter-and intra-sectoral linkages, and weak links with universities and research institutions. In this regard, the main problem is absence of organized innovation management system and does not have clear policy for technological innovation practice in ADPLC NMT; consequently, the organization was found to be unprofitability due to poor performance of organization.

This study sought to close this literature gap by providing answers to these questions; what is the level of adoption technological innovations in ADPLC NMT in Ethiopia? And what is the effect of technological innovations on organizational performance of ADPLC NMT in Ethiopia? Finally, attempts were made to consolidate facts from different literatures to narrow the gap that exists concerning the research.

1.3. Research Questions

The researcher attempted to answer the following two basic questions:

- What is the level of adoption Technological innovations in ADPLC Nazmed medical textiles?
- What is the effect of technological innovations on organizational performance of ADPLC Nazmed medical textiles?

1.4. Objectives of the study

1.4.1 General objective

The general objective of the study is to assess the effect of technological innovations on organizational performance the case of ADPLC Nazmed medical textiles.

1.4.2 Specific objectives

In line with general objective, the study has the following specific objectives:

- To explore the level of technological innovations adoption among ADPLC Nazmed medical textiles.
- To assess the effect of technological innovations on organizational performance in case of ADPLC Nazmed medical textiles.

1.5. Significance of the study

The result of this study will be significant in terms of future references to future researchers. The study will be also possibly used to identify further areas of research by highlighting related topics and critically to identifying research gaps. The study will contribute significantly to technological innovations in the private sector.

The findings of this study added knowledge by showing how technological innovations influence organizational performance of ADPLC NMT and thereby identify mechanisms to utilize by the regulators to improve performance of such firms which form the framework for achievement of economic growth and development goals of company vision. The management of these firms will be able to determine the technological innovations suitable for them to enhance organizational growth and performance.

Findings from the study were also used to form a dynamics strategy /policy for implementing an effective technological innovation practice.

1.6. Scope of the study

Conceptual scope: the study is intended to the effect of technological innovation on organizational performance in the case of ADPLC Nazemed medical textile and whether or not their prevalence impacts organizational performance either positively or negatively.

Time Scope: the study is intended to cover views of current department head, top manager and staff members of the ADPLC Nazemed medical textile.

Geographical Scope: the population is composed of ADPLC Nazemed medical textile employees

Methodological Scope: the study followed mixed research approach.

1.8. Definition of the terms

- **Innovation:** - The process through which an invention or idea is translated into a service or good which creates value (Kantor, 2001).

- **Technological innovation:** - is part of strategy implementation that enhances organization performance through increased expansion and reduced risks (Drucker, 2001). Or refers to the scientific and system based process.
- **Organizational performance :-** The fulfillment of the intended mission of the organization which is obtained through good management, persistent efforts and superior governance in order to achieve goals Richard, Devinney, Johnson and Yip (2009).
- **System Development Enhancement:** - involves adding new capabilities to an existing system. System development enhancement is most commonly implemented to cut costs, improve performance, and meet regulatory requirements or to take advantage of modern technologies (Kash & Rycroft, 2011).
- **Digital Tools and Services:** - used to support business operations, from electronic commerce, to firm communications and to internal business systems.
- **Information Technology Based Innovations:** - continually becoming prominent in improving competitiveness in service operations. Being the action of converting opportunities to become contemporary ideas (Lin & Ho, 2007).
- **Interdepartmental Process Integration:** - In multi-functional firms where separate departments collaborate to produce a perfect coordination in design, assembled product, technical and production capabilities are critical in ensuring that final product meets the standards.

1.9. Organization of the paper

This thesis paper is organized in to five chapters. Chapter one incorporates the introduction parts of the study: the back ground of the study, the statement of the problem, research question, research objectives, Significance of the study, scope and limitation of the study. The second chapter is Literature reviews that present theoretical and empirical literatures related to this research thesis entitled. The third chapter provides detailed information of the study area and institution, research design, research approach, sampling design, data collection tools, data analysis tools, modal specification and ethical consideration. The fourth chapter included data analysis and presentation. The last chapter summarized the finding, conclusion and recommendation.

CHAPTER TWO

REVIEW OF RELETED LITERATURE

2.1 Theoretical Review

Three theories have been used to guide this study. These are; the RBV theory of the firm, the diffusion of innovation theory and TAM.

2.1.1 Resource Based View Theory (RBV)

According to Hart, maintained upper hand and enhanced execution by a firm might be acknowledged by using profitable, uncommon, non-substitutable and incompletely imitable assets (Hart, 1995). A significant asset or heap of assets enables a venture to bridle openings and diminish dangers in its condition. An uncommon asset or heap of assets is one that is not controlled by many. A non-substitutable asset or heap of assets is one for which a proportional asset can't undoubtedly be made by contending organization(s). Incompletely copy able asset or heap of assets is hard to imitate or is repeated after critical expense (Hart, 1995). Ignorant (1983) records these assets to incorporate all abilities, resources, hierarchical procedures, learning and data controlled by a firm.

Assets can just extend the firm's esteem in the event that their utilization is in a manner that thinks about the constant changes outside firm condition (Ireland, Sirmon and Hitt, 2007). Assets could also be sorted as substantial or elusive (Bobbitt, Mentzer and Min, 2004). Wagner (2006) defined technological innovations as the desirable practices acquired from efficient technologies. Desirable practices will support the technological functions in the delivery of services of high quality and sustain superior performance therefore technological innovation frameworks are resources that fall well within RBV theory because they lead to improve service delivery and performance.

This study was the view that higher level of bonding between technological innovations and sustainability is directly associates with an organization's performance and profitability. Under RBV, by exploiting technological innovation practices, ADPLC NMTS were build

capabilities for improve organizational performances. This theory is important because it recognizes organizational processes, close working relationships and knowledge sharing as resources that improve organizational performance.

2.1.2 Diffusion of Innovation Theory

Diffusion of innovation refers to the communication of an idea which is considered to be novel to the members of a social system through certain preferred channels (Rogers, 2003). The spread of new ideas is impacted by four variables which are: the actual innovation, social systems, communication channels and time. Of utmost importance is innovations have to gain acceptability in a wide area in order to be sustainable. According to Fisher (1971), adoption of innovation when mapped in the long run forms an S shaped curve: slow growth at the beginning, followed by accelerating and then decelerating growth, ultimately leading to saturation.

How successful an innovation will be stems from the resolutions put forward by the social systems through five defined steps which are; knowledge: such as innovation awareness and continuous learning regarding it; persuasion which means willingness to have detailed knowledge concerning the innovation; resolution, that is, consideration of pros and cons of innovating together with the choice of whether to adopt the innovation or not; application which is an examination of how useful the innovation will be and finally confirmation, which is eventual decision on the continual use of the innovation (Rogers, 2003). The diffusion of innovation model though falls short of explaining the importance of the capability and the dynamics of different inter-connected trading partners and the influence of power between trading partners (Hart & Saunders, 1997).

Rogers (1995) describes communication channel as a critical contributor to the success of adoption of new innovation in the organization. As an effective communication channel creates prior awareness of the new technology, the trading partners need to work together to ensure the success of technological innovations. This determined by inter- connected industry the organization is in and how influential that organization is to its trading partners (Lundblad, 2003). This theory guided studies on the adoption of technological innovations in businesses.

2.1.3 The Technology Acceptance Model (TAM)

This model clarifies how clients embrace/acknowledge and utilize an innovation. TAM was found Davis in 1989. This model asserts that once a client is given an alternative innovation, some aspects influence their choices on the means and time of utilization. This incorporates its apparent convenience and seen helpfulness. TAM embraces settled causal chain of genuine conduct convictions, goal and disposition. This was produced by social clinicians from the contemplated activity hypothesis. In Davis' study, two vital parts are recognized; feasible convenience and seen helpfulness (Davis, Pallister & Foxall, 2002).

In other studies regarding technology, TAM is widely adopted and greatly contributes to the development of a person's predictability on technology use (Fishbein and Ajzen, 2010). It is effortless to utilize and this influences the perceived usefulness and the intention for adoption (Davis, 1989). Despite TAM being an important source for framework in the study of adoption and use of technology it has many limitations which include the initial purpose designing the model which is extreme unwillingness to spent resources and generality (Strong & Dishaw, 1999), not taking into consideration non organizational setting of the organization (Davis & Venkatesh 2000), and ignoring the factors which moderate the adoption of ICT (Sun & Zhang, 2006).

In this exploration, TAM utilized as a part of three distinctive routes, specifically to explore how the utilization of technology enhances hierarchical administration conveyance to natives, how staff technology preparation impacts the utilization of technology in ADPLC NMT and how the accessibility of technology offices impacts the utilization of technological innovations in ADPLC Nazmed medical textiles.

2.2. Technological Innovations Practices

Hung and Chou (2013) reveal that technological innovation is one of the most important factors for a firm to enhance its performance in the current global industry.

According to Lyytinen and Rose (2003) there were four measures of technological innovations. These were: System development enhancement, utilization of digital tools and services in the execution of the daily operational activities of the organization; information

technology based innovations and interdepartmental process integration which involve integration of processes across all the departments. The measures were discussed in detail below.

2.2.1 System Development Enhancement

System development enhancement involves adding new capabilities to an existing system. Enhancement might also involve adding new features, correcting, identified defects and modifying functionality to enhance efficiency. An enhanced system can replace an existing system in any of these three ways: a commercial off-the-shelf system, a new custom-built system or a hybrid of the two. System development enhancement is most commonly implemented to cut costs, improve performance, and meet regulatory requirements or to take advantage of modern technologies (Kash & Rycroft, 2011).

An effective way for systems development managers to determine if a system needs an overhaul is to perform an operational analysis. By investing a small amount of time and money, the operational analysis process can resolve the problems and extend the life of the system. Enhancement requests address some minor modification for an existing system. One rule for systems development managers to follow is to define enhancements as projects that require less than ten days of labor and that can be completed within one calendar month (Wu & Lin, 2009).

2.2.2 Digital Tools and Services

Digital tools and services are used to support business operations, from electronic commerce, to firm communications and to internal business systems. While digital tools and services require an initial resource investments, this kind of investment can bring long run efficiency by streamlining processes and saving time. Digital tools can also open up new avenues for exchange of data and collaboration all of which creates more venues (Kash & Rycroft, 2011). Various tools can be used to help manage documents, customer relationships, human resources and other internal processes (Alstrup, 2010).

The three main digital tools and services applied by organizations include extranet/ intranet, human resource management and customer association management. An intranet is like an internal internet. It can link employees who working in different locations enable them to

effectively communicate and collaborate. Customer relationship management tools help organizations manage relationships with customers systematically, efficiently and profitably (Alstrup, 2010). Human resource management tool assists an organization to manage its most important resource (the employees) so as to achieve the best from them as well as evaluation of the same.

2.2.3 Information Technology Based Innovations

Information technology based innovations are continually becoming prominent in improving competitiveness in service operations. Being the action of converting opportunities to become contemporary ideas (Lin & Ho, 2007), information technology based innovations are significant to enable a firm(s) survive severe and tough universal circumstances but maintaining sustainable competitiveness (Wu & Lin, 2009). Several information technology based innovations are used in service science and firm operations. Lin & Ho (2007) came up with an important way to classify information technology based innovation as automated storage and retrieval systems; global positioning systems (GPS); Electronic Data Interchange (EDI) and Point of Sales (POS) IT based innovations.

Information technology based innovations are vital to help firms in surviving antagonistic worldwide money related conditions while likewise getting to be plainly instrumental for producing supportable intensity. This is confirmed by the race towards development and interest in environmentally friendly power vitality (e.g. sun oriented vitality and bioenergy), which is attractive for associations to flourish into what's to come. Governments in numerous nations have distinguished advancement as a center component of their dynamic strategies. For example, advancement is a critical part in strategies and vital research need for both developing and developed nations (Lin and Ho, 2007).

2.3.4 Interdepartmental Process Integration

In multi-functional firms where separate departments collaborate to produce a perfect coordination in design, assembled product, technical and production capabilities are critical in ensuring that final product meets the standards. Thus, proper integration is a vital management obligation which balances decentralization and centralization of operational efficiency within the entire group. This enables different participants to homogeneously function and coordinate

energies to attain the goals of an organization. Interdepartmental process integration defines general goals and departmental sub-goals so that everyone articulates their roles and how these results in realizing overall objectives (Tushman & Nadler, 2006).

2.3. Empirical Literature Review

The significance of innovation and how influential it is to the performance of an organization was depicted by the study conducted by Furst, Lang, and Nolle (2012) who considered several companies from five countries. From the findings of this study the differences in performance of firms in the different countries was determined by their innovative capacity: France, England, Germany, United States and Japan. This study was however conducted in developed countries and so the findings cannot be generalized in the local context. Kotler (2003) in his study of the association between innovation and performance, by examining Sony Company, showed that the market share for a front runner in innovation expanded significantly by way of offering many new products to clients. This study was a case study as it only focused on Sony Company. In addition, the focus was effect of innovation on market share and not overall firm performance which is the focus of the current study.

Gerstenfield and Wortzel (2007) did an analysis of the link between the use of innovation technologies that are internet-based, various types of innovation and the financial performance on firm level. The data used was selected from European enterprises totaling 7,302. The findings from the empirical investigation showed that internet-based innovation technologies were significant in enabling innovation in the year 2003. The results also showed that all the technological innovations whether internet-enabled or non-internet-enabled product contributed to positive turnover and growth in employment. Additionally, it showed that higher profitability is mostly the result of the innovative activity of the firm. Although this study focused on innovation technologies and performance, it had two weaknesses that the current study sought to overcome. First, the study was carried on firms in a developed public sector context which is different from the current study. Secondly, the study focused on financial measures of performance while the current study focuses on both financial and non-financial measures of performance.

The study by Mamoghli and Mabrouk (2010) asserts that as the innovation process continues overtime, banks considered to be innovative will be able to continue enjoying attractive returns on

the newer or improved products. However, supernormal profits will decrease following widespread adoption of the new technologies. Grndiche (2004) opinion is that, for a firm to ensure it remains competitive in a dynamic environment and achieve its set objectives of profitability, sales volume and market share, it must make efforts to continually improve products to satisfy customer desires and needs that keep changing. Mabrouk and Mamoghli (2010) state the reasons that drive new product development as mentioned by most business persons include growth in the corporation, diversification, and the search for increased competitiveness. They also add that the main goal for developing new products is to explore other new opportunities since new products enhance the firms' survival in the long run growth. These three studies focused on one aspect of innovation (product) and this is different from the current study that focuses on technological innovations.

Nwokah, Ofoegbu and Elizabeth (2009) did a study on the variables of product development such as the quality of the product mix which showed a positive correlation to corporate performance variables of sales volume, customer loyalty and profitability. Neely (2002) turnover in terms of sales for firms embracing innovation was faster than firms that do not embrace innovation. They found that there exists a significant association between the innovative sales share and the firm's change in sales turnover. Chesbrough (2010) found that the effects of innovation were reflected in higher levels of products, better standards of products as well as process-oriented outcomes such as improved production flexibility and increased production capacity. Nwokah et al., (2009) and Chesbrough (2010) focused on one aspect of product innovation while the current study focuses on four different aspects of technological innovations. Although Neely (2002) focused on innovation, the dependent variable in that study was sales volume while the current study focuses on different measures

of firm performance.

Firm performance is said to be the outcome that is achieved when a firm meets its goals (Wladawsky-Berger, 2008). Conventionally, the variation in firm's performance is linked to business structure (Ruttan, 1984). The neo-classical economic theory however sees business growth as the process of achieving the minimum point of the average cost. Ruttan (1984) came up with a theory that was resource-based where a business's performance is reliant on the firm resources and abilities the business has to source sustainable market competitive advantages and argues that for firms to grow, they must be able to mobilize, access and position resources.

Hill and Utterback (2009) mentioned that the driver of change and development in societies that are associated with increasing levels of employment growth had a strong export market position, productivity, trade and improvement in the quality of life and trade. The technological innovation process however comes with some complexities in the process of interacting with industrial factors; studies on the concept have proven to be difficult. However, Lall (1980) stressed that technological innovation is mostly being undertaken in the developing country's modern sectors especially those that have been in the manufacturing industry for long and with broad -based capital good sectors. These innovations bring change in a variety of ways including increased efficiency and productivity from the simplicity of learning through practicing, advancements in design, construction and management of advanced industrial processes.

Additionally Worch and Truffer (2012) studied how IT innovations impacts service environments and found that the adoption of technology is associated with a given degree of suspicion but with expectations that it was lead to the improvement of performance and service delivery. It was also noted that the decision to outsource technological services

capabilities is considered as passing the blame for failure of service under public domain, in this regard, the main problem is absence of organized innovation management system and does not have clear policy for technological innovation practice in ADPL NMT; consequently, the organization was found to be unprofitability due to poor performance of organization and also there was no update technological innovations system due this high delaines of reporting, high cost of manufacturing , lack of Asset efficiency utilization and low Productivity.

2.5 Conceptual Framework

The review of previous studies has highlighted the relationships among variables of current study. The literature review indicates that all factors under study are explored in different previous studies in different organization. This research framework was customized from the reviewed literatures related to effect of technological innovation on organizational performance to address the objectives and research questions of this study. Thus, the proposed conceptual framework states that System development enhancement, Use of digital tools in support of daily activities, Information technology based innovations and Integration of interdepartmental processes are determinant factors that affect technological innovation on organizational performance in the case of ADPLC NMT. The multiple performance criteria for nonprofit organizations include responsiveness, flexibility, cost, productivity, asset efficiency utilization and reliability (Chang, Tsui, & Hsu, 2013). An organization's performance is centered on the kind of activities that it carries out in fulfillment of its mission. According to this study performance will be measured using profitability, cost reduction and productivity.

The association between performance and technological innovation has been a subject of interest to many researchers and policy makers. Positive relationships between performance and technological innovation have been reported in recent studies (Loof & Heshmatt, 2013). Performance was measured using sales and export revenues, return of assets and productivity. These were measured in relation to sell of new products by their employees, employee growth and operating profit. A positive link between innovation output and growth in sales was found but no evidence that relates technological innovation output and employee growth (Klomp & Leeuwen 2011).

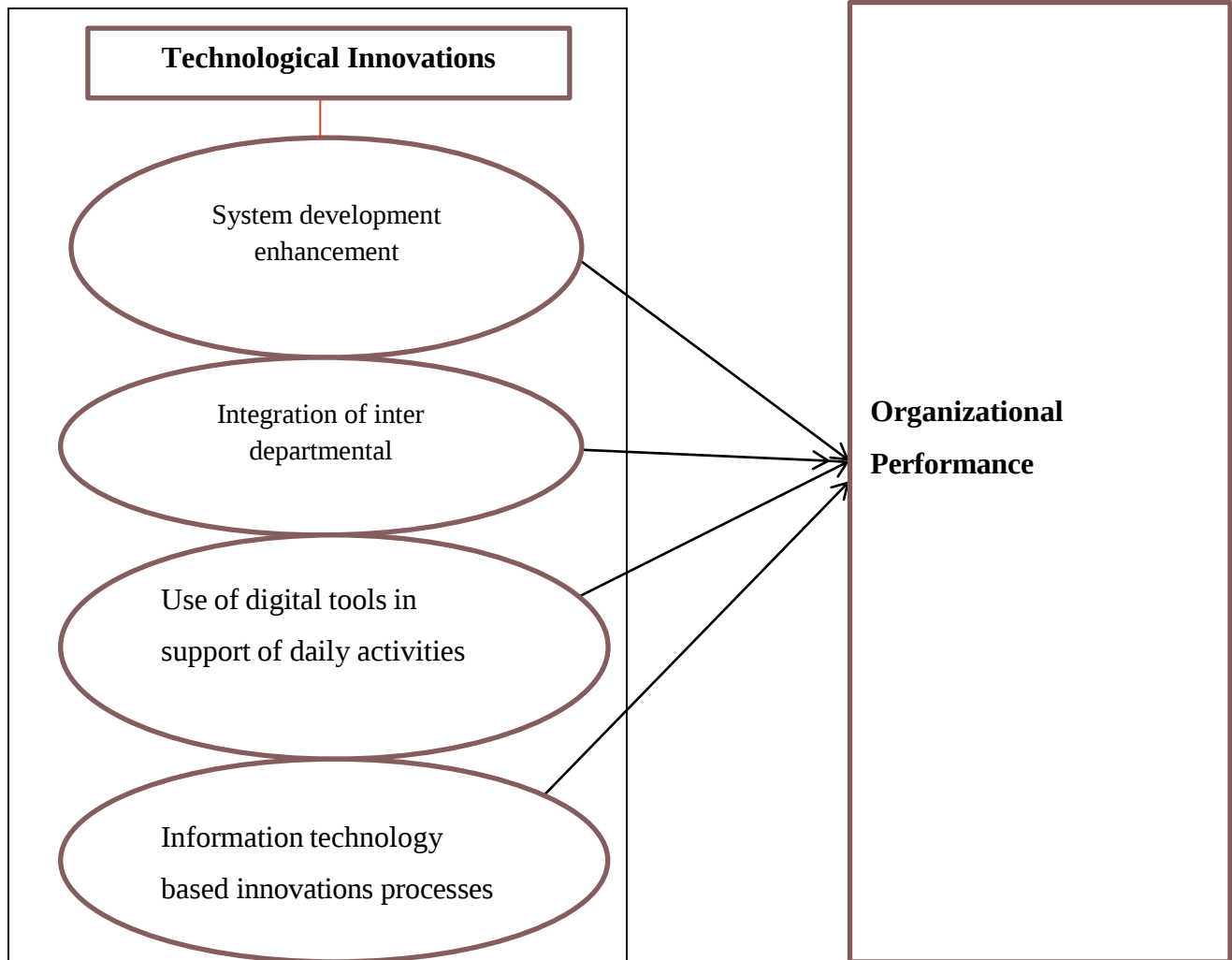


Figure 1. Conceptual Framework

Source: Mutie 2018

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

Research design is a master plan that specifies the methods and procedures for collecting and analyzing needed information (Zikmund et al, 2009,). This study used both explanatory and descriptive type of research design to explain the effect of technological innovations on ADPLC NMT performance.

3.2 Research approach

To keeping the advantage of the result, mixed research approaches were used. According to Bazeley (2002) mixed approach helps to have a more in-depth information and knowledge of the problem and provide rich datasets. It also assists to increase findings, reliability and credibility through the triangulation of the difference evidence results. According to Creswell (2012) six mixed methods, design strategies, the researcher used triangulation, it helps to two or more methods used to confirm, cross-validation, or corroborate findings within a study and used to overcome a weakness in using one method with the strengths of another.

Mixed approach provides better thoughtful of a study problem than either quantitative or qualitative data by itself (Creswell, 2012:22). The reason for using mixed approach is to take advantage of the strengths of both qualitative and quantitative approaches to escape from pitfalls of using a single research approach (Walliman, 2006)

3.3. Sampling Design

3.3.1 Target Population

The population of this study was included all senior level manager employees of ADPLC Nazmed Medical textiles. According to fourth quarter and annual report of ADPLC NMT, for the period 2023/24fiscal year, as of June 30, 2024, the total number of senior level manager manpower of the ADPLC NMT was 40 permanent employees. The study target populations

were constitutes 40 employees working under ADPLC NMT. The strategy that the researcher used to determine the number of respondents is the census method. From total target population 35 participants were responded.

3.3.2 Sampling Size

Sampling size of the study was a list of all senior levels managers who works ADPLC NMT. A census survey of all the identified respondents of ADPLC NMT permanent senior level managers employees works within ADPLC NMT were adopted in this study since the number of the target population is relatively manageable in terms of administering the research instrument, cost and time. The population sizes of study were all permanent middle and senior level manager employees of ADPLC NMT which is 40.

3.4. Data collection tools

This study was used primary and secondary source of data. The primary data were collected through the questionnaires that contain relevant to technological innovations and organizational performance in the study area and this study's targeted respondents are senior level managers of the ADPLC NMT. This is because they are involved in the management of the organizations and have a broad understanding of the affairs of their organizations. Secondary data were collected source such as written document in office, magazine and website. The questionnaire was used to gather the primary data from the employees of ADPLC Nazmed medical textile. For the purpose of this study, mainly close-ended items were used to measure dependent and independent variable. The questionnaire was organized in to three parts. The first part of the questioner is used to gather information about demographic characteristics of the respondent. The second part is used to gather information about level of technological innovations adoption on organizational performance. The third part is used to collect attitude regarding organizational performance.

This study was used 5 point Likert Scale type method to range the respondent level of agreement; strongly disagree, disagree, Neutral, Agree, and strongly agree, with a numeric value of 1-5 respectively. Secondary data was the company documents, and manuals to obtain

historical and other types of data's. The qualitative data was collected through the interviews or observation.

Interview

For this study semi-structured face to face key informant interviews was conduct with technological innovations based on the organizational structure. The respondents were select purposively because of their extensive knowledge, experience, and involvement with related to study objective and their ability to contribute to the overall this research objective.

Document Analysis

The researcher was use secondary data such as research findings, published and unpublished materials, reports and other documents related to effect of technological innovation on organizational performance.

3.5 Data Analysis Tools

The collected data analyzed using descriptive and inferential statistics with the aid of SPSS version 26. Descriptive statistical methods included central tendency, frequency distribution tables and percentages. Inferential statistical analysis included correlation and regression analysis to explain the nature of the relationship between dependent and independent.

3.6 Model Formulation and Specification

In this study, simple multiple regressions modal applied to find out the significant variables which have influence on the effect of technological innovation on organizational performance in the case ADPLC Adama Nazmed medical textiles. The main reason the used of regression equation on this study is to help the researcher in described, understood, predicted and controlled the stated variables. The independent variable of this study were System development enhancements, use of digital tools in support of daily activities, new computing and technology capacity and integration of interdepartmental processes while the dependent variable of the study was organizational performance.

The simple multiple regressions model is: -

$$Y = \beta_0 + \beta_1 SDE + \beta_2 DST + \beta_3 ITI + \beta_4 IPI + \epsilon$$

Where Y – is the dependent variable organizational performance,

SDE, DST, ITI and IPI are independent or explanatory variables (System development enhancements, digital tools and services, Information technology based innovations and Integration of interdepartmental processes) + ϵ

β_0 - is the constant (intercept point) it gives average effect on "Y" if all the independent variables removed from the equation;

$\beta_1, \beta_2, \beta_3$, and β_4 are regression coefficient to measure the change in mean value of "Y", per unit change irrespective of independent variables while ϵ - is an error term.

Measurement of Dependent Variables

The dependent variable of the study is organizational performance.

Organizational performance: was measured by 3 items; these were profitability, cost reduction and productivity.

Organizational performance: Richard, Devinney, Johnson and Yip (2009) defined organizational performance as fulfillment of the intended mission of the organization which is obtained through good management, persistent efforts and superior governance in order to achieve goals. The multiple performance criteria for nonprofit organizations include responsiveness, flexibility, cost, productivity, asset efficiency utilization and reliability (Chang, Tsui, & Hsu, 2013). An organization's performance is centered on the kind of activities that it carries out in fulfillment of its mission. Some other frequent performance measures include productivity, market share, profitability, growth, competitive position and stakeholder satisfaction (Kantor, 2001). However, financial elements are not the only indicator for measuring firm performance (Chesbrough, 2010); business performance is split into four dimensions, rational goals, internal processes, human relations and open system, where each gets measured by whatever changes in its variables. There seem to be no agreement

concerning the best or even the most sufficient measure of organization performance. This is because many views exist as to what are the desirable outcomes of organizational effectiveness and because performance is often based on the theory and purposes of the research that is being performed (Carton & Hofer, 2006). Some use financial measures as a criterion to judge the success or failure of a decision or action. Performance measurement focuses on the internal processes to quantify how effective and efficient an act is, by use of a number of metrics.

System development enhancement is most commonly implemented to cut costs, improve performance, and meet regulatory requirements or to take advantage of modern technologies (Kash & Rycroft, 2011).

Use of digital tools in support of daily activities It can link employees who working in different locations enable them to effectively communicate and collaborate, manage customers systematically, efficiently and profitably (Alstrup, 2010) and Human resource management tool assists an organization to manage its most important resource (the employees) so as to achieve the best from them as well as evaluation of the same.

Information technology based innovations are vital to help firms in surviving antagonistic worldwide money related conditions while likewise getting to be plainly instrumental for producing supportable intensity.

Interdepartmental process integration defines general goals and departmental sub-goals so that everyone articulates their roles and how these results in realizing overall objectives (Tushman & Nadler, 2006).

3.7. Reliability and Validity Test

3.7.1 Reliability

To determine reliability of research instruments, the instrument was pre-tested through pilot study before the actual data collected to enhance reliability. The constructs testing for reliability achieved by calculating the Cronbach's alpha. According to (Spector, 1997) the widely accepted minimum standard for internal consistency is 0.70. Reliability refers to the consistency that an instrument demonstrates when applied repeatedly under similar environments (Kerlinger, 2003). According to Clark et al. (2007) the importance of pre-testing a questionnaire is to help the researcher understand the meaning of the questions to be put to the respondents and how they arrive at their response.

Table 1. Reliability Statistics of the whole data

Sr. No	Component	No. of items	Cronbach's Alpha
1	System development enhancements	4	0.866
2	Digital tools and services	4	0.757
3	Information technology based innovations	3	0.716
4	Interdepartmental process integration	4	0.910
5	Organizational performance	3	0.747
Total		18	0.800

Source: - Own survey Data (2024)

3.7.2 Validity

According to (Bless & Higson-Smith, 1995) Validity refers to whether the measuring instrument measures what it is supposed to or whether the measure reflects the phenomenon

the researcher claims to be investigating. Validity of an instrument is the success of a scale in measuring what it sets out to measure so that differences in individual scores can be taken as representing true differences on the characteristics under study.

Face validity: validity indicates the questionnaire appears to be appropriate to the study purpose and content area. It is the easiest validation process to undertake but it is the weakest form of validity. It evaluates the appearance of the questionnaire in terms of feasibility, readability, consistency of style and formatting, and the clarity of the language used. Thus, face validity is a form of usability rather than reliability. To determine the face validity of, an evaluation form will developed to help respondents assess each question in terms of: the clarity of the wording, the likelihood the target audience would be able to answer the questions, the layout and style.

Content validity: it indicates the content reflects a complete range of the attributes under study and is usually undertaken by seven or more experts (Devon et al., 2007). Content validity will be proved to ascertain whether the content of the questionnaire appropriate and relevant to the study purpose. To estimate the content validity of the questionnaire, the researchers were clearly define the conceptual framework of identified determinants, particularly related to individual perception by undertaking a thorough literature review and seeking expert opinion.

3.7.3 Ethical Consideration

The goal of ethics in research is to ensure that no one is harmed or suffers adverse consequences from research activities. Saunders et al., (2013) research subjects have ethical rights. In the spirit of honesty, all thoughts, ideas, writing or drawings that will borrowed from others will paraphrased into own words that will be properly credited through acknowledgement and citation.

To avoid unnecessary doubt and lying; the researcher investigated the study by considering the research ethics and announce the respondents about the objective of the study which is only for academic purpose and aware that their answers to fill strictly.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

This chapter shows results and interpretation of the gathered data. It consists of two sections. The first section shows the demographic characteristics of respondents in terms of gender, age group, educational qualification, and work experience. The second section discusses the main part of the study, the analysis and interpretation of data those were gathered through questionnaire from ADPC NMT employees about the practice of Technology and its effect.

4.1. Response Rate

A total of 40 questionnaires were distributed to respondents who works ADPLC Nazmed medical textiles. However, the table 2 showed that only 35 participants participated and filled correctly and returned the questionnaires. Five participants did not returned the questionnaires & these questionnaires were not used for analysis. Thus, the researcher made analysis on 35 (87.5%) of respondents which was valid for the study to examined. From a given response rate 70% of the total population were collected a minimum appropriate percentage to carry out a research (Birhane et al., 2017)

Table 2.Response Rate

Response (Participant)	Total population	Responded frequency	Percentage
Responded	40	35	87.5%

Source: Own Survey data (2024)

4.2 Demographic information of the respondents

The research questionnaires were included the following demographic information of the respondents gender, age group, education level, management level and working experience to identify which groups are the most participated in the study. The overall demographic information was described here below in the table 3 and table 4

Table 3. Gender and Age of the Respondent

Variables	Category	Frequency	Percent	Cumulative Percent
Gender	Male	28	80	80
	Female	7	20	100.0
Age Group	18-30	3	8.6	8.6
	31-35	16	45.7	54.3
	36-40	5	14.3	68.6
	41-45	4	11.4	80
	46-50	5	14.3	94.3
	> 50	2	5.7	100.0

Source: - Own survey (2024)

As shown in the above table 3, 28 (80%) of the respondents were male and the remaining 7 (20%) of respondents were female. It described that major leaders ADPLC Nazmed medical textiles were male during the period of the study. And also the majority of leader's age group under ADPLC Nazmed medical textiles were 31 - 35 and accounted for 45.7% and the next age group lay between 36-40 and 46-50 which were 14.3% and > 50 age group were the lists that account only 5.7%.

Table 4. Education level, management level/position and working experience of the Respondent

Variables	Category	Frequency	Percent	Cumulative Percent
Educational level	Diploma	5	14.3	14.3
	BA/BSC Degree	15	42.9	57.1
	Master Degree and above	15	42.9	100.0
Management level	Senior level	18	51.4	51.4
	Meddle level	15	42.9	94.3
	Lower level	2	5.7	100.0
Work	< 5	9	25.7	25.7
	5-10	9	25.7	51.4

Experience	> 10	17	48.6	48.6	100.0
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Source: - Own survey (2024)

Table 4 the results of analysis of distribution of the respondents by their academic qualification. Results shows that majority of the respondents 15 (42.9%) had both first degree and master's degree and above and 5 (14.3%) respondents had diploma qualification. The distribution revealed that most leaders had MBA/BSC and Master Degree holders. Results shows the above table 4 according to management level Most of the respondents 18 (51.4%) were in the senior level management, followed by 15 (42.9 %) middle level manager and the list of respondents 2 (5.7 %) were lower level management. This indicates that majority of the respondents have been senior and middle level management.

Table 4 above presents the results of respondents' year of service as a measure of experience on the job. The results showed that the majority of the respondents 17 (48.6%) have experience > 10 years and followed by 9 (25.7%) respondent have experience 5-10 years and < 5 both were equal. This indicates that majority of the respondents have been experienced > 10 years in the ADPLC Nazmed medical textiles.

4.3 Descriptive analysis

4.3.1 System development enhancement

The study established the impact of system development enhancement on organizational performance of ADPLC Nazmed medical textiles. The responses as per the five point likert scale with 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, and 5 = Strongly Agree as shown in table 5 below;

The table 5 results demonstrated that among the four items /indicators related to System development enhancement, the organization frequently adds new capabilities to an existing system gained a mean score of 3.20 from which 11.4% were strongly disagreed , 5.7 % were disagreed, 48.6% were neutral, 22.9% were agreed and 11.4% were strongly agreed. Majority

of the respondents believe that the organization frequently adds new capabilities to an existing system were at optimum level adapted.

In table (5) item No. 2, for the statement ‘New features are often added to the existing system’ in organization mean value of 2.77, from which 31.4% were strongly disagree, 11.4% disagree, 11.4% neutral, 40% agreed and 5.7% were strongly agreed. Therefore, the response rate shows that the majority of the respondents believe that the new features are often added to the existing system in ADPLC Nazmed medical textiles.

In table (5) item No. 3, for the statement Identified defects are corrected on a continuous basis in organization mean value of 2.86, from which 28.6% were strongly disagree, 14.3% disagree, 11.4% neutral, 40% agree and 5.7% strongly agree. Therefore, the response rate shows that the 40% of the respondents believe that the Identified defects are corrected on a continuous basis in organization.

In table (5) item No. 4, for the statement ‘the organization modifies systems on a continuous basis to enhance efficiency’ my expectations with 3.20 mean value score, from which 14.3% were strongly disagree, 11.4% disagree, 17.1% neutral, 45.7% agree and 11.4% strongly agree. Therefore, the response rate shows that the majority of the respondents agreed on the issue, this implies that the respondents believe that modifies systems on a continuous basis to enhance efficiency in the ADPLC Nazmed medical textiles.

Additionally, in table (5) illustrated that the overall mean score level of adoption System development enhancement was 3.01. This indicates the respondents’ agreement on the stated items and this shows that System development enhancement in the organization was optimum level effective.

Table 5.Respondents System development enhancement

No	Item	Respondent opinion	Frequency	percent	Mean	SD
1	The organization frequently adds new capabilities to an existing system	SDA	4	11.4	3.20	1.098
		DA	2	5.7		
		N	17	48.6		
		A	8	22.9		
		SD	4	11.4		
2	New features are often added to the existing system	SDA	11	31.4	2.77	1.416
		DA	4	11.4		

		N	4	11.4		
		A	14	40.0		
		SA	2	5.7		
3	Identified defects are corrected on a continuous basis	SDA	10	28.6	2.86	1.389
		DA	5	14.3		
		N	4	11.4		
		A	14	40.0		
		SA	4	5.7		
4	The organization modifies systems on a continuous basis to enhance efficiency	SDA	5	14.3	3.20	1.250
		DA	4	11.4		
		N	6	17.1		
		A	16	45.7		
		SA	4	11.4		
Overall System development enhancement					3.01	1.29

Source: - Own survey (2024)

4.3.2 Digital Tools and Services

The study established the effect of digital tools and services on organizational performance of ADPLC Nazmed medical textiles. The employees' responded on digital tools and services. The responses are rated on 5 point likert scale of 5- Strongly agree, 4- Agree, 3- Neutral, 2- Disagree and 1- Strongly disagree. The outcome was indicated in table 6.

Table 6 Respondents digital tools and services

No	Item	Respondent opinion	Frequency	Percent	Mean	SD
1	The organization is connected with an intranet	SDA	2	5.7	3.23	1.031
		DA	4	11.4		
		N	18	51.4		
		A	6	17.1		
		SA	5	14.3		
2	The organization is connected with an extranet	SDA	7	20	3.09	1.401
		DA	3	8.6		

		N	13	37.1		
		A	4	11.4		
		SA	8	22.9		
3	The organization has an efficient human resource management system	SDA	7	20	2.80	1.256
		DA	7	20		
		N	10	28.6		
		A	8	22.9		
		SA	3	8.6		
4	The organization has an efficient customer relationships management system	SDA	3	8.6	3.26	1.094
		DA	3	8.6		
		N	16	45.7		
		A	8	22.9		
		SA	5	14.3		
Over all Digital tools and services					3.10	1.195

Source: - Own survey (2024)

From the above table (6) item No. 1 for the statement ‘The organization is connected with an intranet’ the respondents reacted differently 17.1% (6) of the respondents selected agree and 14.3% (5) of the respondents selected strongly agree. While 51.4% (18) of the respondents remained neutral. The other 11.4% (4) of the respondents answered disagree and 2(5.7%) of the respondents replied strongly disagree. Based on assessment 17.1% of the respondents believe that the organization is connected with an intranet.

In table (6) item No. 2, for the statement ‘the organization is connected with an extranet was participatory,’ 4(11.4%) of the respondents replied agree, 8(22.9%) of the respondents replied strongly agree, 13(37.1%) of the respondents remained neutral, 3(8.6%) of the respondents replied disagree and 7(20%) of the respondents replied strongly disagree. Therefore, the response rate shows that the majority of the respondents believe that the organization is not connected with an extranet.

In table (6) item No. 3 for the statement ‘The organization has an efficient human resource management system’, 7(20%) of the respondents replied strongly disagree, 7(20%) the respondents responded disagree, 10(28.6%) of the respondents remained neutral, 8(22.9%) of the respondents replied agree and 3(8.6%) of the respondents replied strongly agree. According to the response rate majority of the respondents disagreed and this implies that they did not the organization has an efficient human resource management system.

In table (6) item No. 4 for the statement ‘The organization has an efficient customer relationships management system, 3(8.6%) the respondents responded strongly disagree, 3(8.6%) the respondents responded disagree 16(45.7%) of the respondents remained neutral, 8(22.9%) of the respondents replied agree and 5(14.3%) of the respondents replied strongly agree. According to the response rate 45.7% of the respondents’ neutral and this implies that they did not the organization has an efficient customer relationships management system.

Additionally, in table (6) illustrated that the overall mean score level adaptation of digital tools and service in ADPLC Nazmed medical textile was 3.10. This indicates the respondents’ agreement on the stated items and this shows that digital tools and service in the organization was did not effective almost around average.

4.3.3 Information Technology based innovations

The employees’ responded on information Technology based innovations. The responses are rated on 5 point likert scale of 5- Strongly agree, 4- Agree, 3- Neutral, 2- Disagree and 1- Strongly disagree. The outcome was indicated in table 7.

Table 7.Respondents Information Technology based innovations

N o	Item	Respondent opinion	Frequency	Percent	Mean	SD
1	The organization has automated storage and retrieval system	SD	2	5.7	2.89	1.078
		DA	12	34.3		
		N	13	37.1		
		A	4	11.4		
			4	11.4		

		SA				
2	Electronic data interchange is widely practiced in the organization	SDA	4	11.4	2.89	1.183
		DA	10	28.6		
		N	11	31.4		
		A	6	17.1		
		SA	4	11.4		
3	The organization makes use of global positioning systems time servers	SDA	8	22.9	2.86	1.309
		DA	6	17.1		
		N	6	17.1		
		A	13	37.1		
		SA	1	2.9		
Over all Information Technology based innovations					2.88	1.19

Source: - Own survey (2024)

From the above table (7) item No. 1 for the statement ‘The organization has automated storage and retrieval system’ the respondents reacted differently 5.7% (2) of the respondents selected strongly disagree and 34.3% (12) of the respondents selected disagree. While 37.1% (13) of the respondents remained neutral. The other 11.4% (4) of the respondents answered agree and 11.4 % (4) of the respondents replied strongly agree. According to the response rate majority of the respondents neutral and disagreed and this implies that they did not the organization has automated storage and retrieval system.

In table (7) item No. 2, for the statement ‘Electronic data interchange is widely practiced in the organization,’ 4(11.4%) of the respondents replied strongly disagree, 10(28.6%) of the respondents replied dis agree, 11(31.4 %) of the respondents remained neutral, 6(17.1%) of the respondents replied agree and 4(11.4%) of the respondents replied strongly agree. Therefore, the response rate shows that the majority of the respondents’ disagreed and they believed that the organization did not electronic data interchange widely. In table (7) item No. 3 for the statement ‘The organization makes use of global positioning systems time servers’, 8(22.9%) of the respondents replied strongly disagree, 6(17.1%) the respondents responded disagree, 6(17.1%) of the respondents remained neutral, 13(37.1%) of the respondents replied agree and 1(2.9%) of the respondents replied strongly agree. According to the response rate

majority of the respondents not agree and this implies that they did not voluntary respond either did not understand the question.

Additionally, in table (7) illustrated that the overall mean score of information technology based innovations level of adoption in ADPLC Nazmed medical textile was 2.88. This indicates the most respondents failed to disagree with the statement.

4.3.4 Interdepartmental Process Integration

The study's aim was to explore the impact of interdepartmental process integration on organizational performance of ADPLC Nazmed medical textile. The respondents were asked to respond on statements related to interdepartmental process integration. The responses are rated on 5 point likert scale of 5- Strongly agree, 4- Agree, 3- Neutral, 2- Disagree and 1- Strongly disagree. The results are shown in table 8.

Table 8.Respondents interdepartmental Process integration

No	Item	Respondent opinion	Frequency	Percent	Mean	SD
1	There is continuous interaction between departments	SDA	1	2.9	3.31	0.900
		DA	3	8.6		
		N	19	54.3		
		A	8	22.9		
		SA	4	11.4		
2	There is efficient flow of information between functions and departments	SDA	8	22.9	2.91	1.337
		DA	6	17.1		
		N	4	11.4		
		A	15	42.9		
		SA	2	5.7		
3	Collaboration between departments is encouraged in the organization	SDA	9	25.7	3.03	0.543
		DA	3	8.6		
		N	11	31.4		
		A	2	5.7		
		SA	10	28.6		
4	All department understand their roles and how these affect the overall objective	SDA	8	22.9	2.94	1.327
		DA	5	14.3		
		N	5	14.3		
		A	15	42.9		
		SA	2	5.7		
Interdepartmental process integration					3.05	1.28

Source: - Own survey (2024)

From the above table (8) item No. 1 for the statement ‘There is continuous interaction between departments’ the respondents reacted differently 2.9% (1) of the respondents selected strongly disagree, 8.6% (3) of the respondents selected disagree and 54.3% (19) of the respondents selected neutral. The other 22.9% (8) of the respondents answered agree and 4(11.4%) of the respondents replied strongly agree. Therefore, the response rate shows that the majority of the respondents’ neutral and this implies that there is no continuous interaction between departments in ADPLC Nazmed medical textile.

In table (8) item No. 2, for the statement ‘There is efficient flow of information between functions and departments,’ 8(22.9%) of the respondents replied strongly disagree, 6(17.1%) of the respondents replied disagree 4(11.4%) of the respondents replied neutral, 15(42.9%) of the respondents replied agree, and 2(5.7%) of the respondents replied strongly agree. Therefore, the response rate shows that the 42.9% of the respondents believed that the organization was efficient flow of information between functions and departments.

In table (8) item No. 3 for the statement ‘Collaboration between departments is encouraged in the organization’, 7(20%) of the respondents replied disagree, 7(20 %) of the respondents remained neutral, 17(48.6%) of the respondents replied agree and 4(11.4%) of the respondents replied strongly agree. According to the response rate majority of the respondents agreed and this implies that they have collaboration between departments in the organization.

In table (8) item No. 4 for the statement ‘All department understand their roles and how these affect the overall objective’, 9(25.7%) the respondents responded strongly disagree, 3(8.6%) the respondents responded disagree, 11(31.4%) of the respondents remained neutral, 2(5.7%) of the respondents replied agree and 10(28.6%) of the respondents replied strongly agree. According to the response rate of the respondents agreed and this implies that they have all department understand their roles and these affect the overall objective of the organization.

Additionally, in table (8) illustrated that the overall mean score of all department understand their roles and how these affect the overall objective of the organization was 3.05. This indicates the almost average respondents agreed to with the statement.

4.3.5 Organizational performance

The study also established the level of organizational performance of ADPLC Nazmed

medical textile in relation to implementation of technological innovations. The respondents were asked to respond on aspects related to organizational performance. The responses are rated on 5 point likert scale of 1- Greatly reduced, 2-Reduced, 3-Constant, 4- Improved and 5- Greatly improved. The responses were rated on a five likert scale in table 9. The findings were as demonstrated below;

Table 9.Respondents organizational performance

N o	Item	Respondent opinion	Frequency	Percent	Mean	SD
1	Cost reduction	GR	5	14.3	3.14	1.216
		R	4	11.4		
		C	11	31.4		
		I	11	31.4		
		GI	4	11.4		
2	Productivity	GR	9	25.7	3.11	1.59
		R	3	8.6		
		C	9	25.7		
		I	3	8.6		
		GI	11	31.4		
3	Profitability	GR	8	22.9	2.97	1.339
		R	5	14.3		
		C	4	11.4		
		I	16	45.7		
		GI	2	5.7		
Over all technological innovations and organization performance					3.07	1.38

Source: - Own survey (2024)

From the above table (9) item No. 1 for the statement ‘Cost reduction’ the respondents reacted differently 5.7% (2) of the respondents selected greatly reduced, and 11.4% (4) of the respondents selected Reduced. While 31.4% (11) of the respondents remained Constant, The other 31.4% (11) of the respondents answered Improved and 11.4 % (4) of the respondents replied greatly improved. According to the response rate majority of the respondents Improved and this implies that technological innovations practices in organization to reduced costs.

In table (9) item No. 2, for the statement ‘productivity’ 9(25.7%) of the respondents replied greatly reduced, 3(8.6%) of the respondents replied reduced, and 9(25.7%) of the respondents

replied constant, 3(8.6 %) of the respondents replied improved and 11(31.4%) of the respondents replied greatly improved. Therefore, the response rate shows that the average of the respondents' responded strongly improved and they believed that technological innovations practices in organization to improved productivity. In table (9) item No. 3 for the statement 'Profitability' 8(22.9%) of the respondents replied greatly reduced, 5(14.3%) of the respondents replied reduced, 4(11.4%) the respondents responded constant, 16(45.7%) of the respondents replied improved and 2(5.7%) of the respondents replied greatly improved. According to the response rate majority of the respondents improved and this implies that they believed technological innovations practices in organization to improved profitability.

Additionally, in table (9) illustrated that the overall mean score of organizational performance was 3.07. This indicates the almost average respondents believed that technological innovations practices improved organizational performance.

4.4 The Relationships between the Dependent and Independent variables

To determine a relationship between two variables, correlation analysis is one of the most widely used analyses. The correlation is statics used to measure the degree or strength of relationship among variables (Taylor, 1990). To interpret the strength of relationship between variables, the researcher used the guide line suggested by (Taylor, 1990). According to him the correlation coefficient (r) values $r \leq 0.35$ is considered as low or weak correlation, $r = 0.36 - 0.67$ is moderate correlation, $r = 0.63 - 0.89$ is strong or high correlation and correlation with $r \geq 0.90$ is very high correlation. The value of correlation coefficient (r) is always between 0 and 1. If the value of $r = 0$ there is no correlation between two variables whereas if the value of $r = 1$ the two variables are perfectly correlated each other.

As shown Pearson correlation matrix table 10, all independent variables are positive correlated with dependent variables. Notice that the cells in the upper right to lower left diagonal shows coefficients of 1.00. This is because each variable correlated itself has perfect correlations. The results of correlation coefficients analysis indicated in the table 10 shows that there is a positive correlation between independent variable (system development enhancement, Digital Tools and services, Information Technology Based innovation, and Interdepartmental process Integration) and Organizational performance. Results of the Bivariate correlations shows that system development enhancement has a strong positive and significant correlation with

Organizational performance with $r=0.818$, $p < 0.01$, Digital Tools and services has a strong positive and significant correlation with Organizational performance $r= 0.754$, $p < 0.01$, Information Technology Based innovation has a strong positive and significant correlation with Organizational performance, $r=0.823$, $p < 0.01$, and Interdepartmental process Integration has also a strong positive and significant correlation with Organizational performance, $r=0.927$, $p < 0.01$.

Table 10. Correlation Matrix

		Correlations				
		SDE	DTS	ITI	IPI	OP
SDE	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	35				
DTS	Pearson Correlation	.820**	1			
	Sig. (2-tailed)	.000				
	N	35	35			
ITI	Pearson Correlation	.801**	.707**	1		
	Sig. (2-tailed)	.000	.000			
	N	35	35	35		
IPI	Pearson Correlation	.924**	.761**	.796**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	35	35	35	35	
OP	Pearson Correlation	.818**	.754**	.823**	.927**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	35	35	35	35	35

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

4.5 Regression Analysis

The regression analysis was conducted to predict by how much the independent variable explains the dependent variable. It is also used to predict by how much each independent variable explains the dependent variable. A multiple linear regression was conducted to determine if predictor variables (system development enhancement, Digital Tools and services, Information Technology Based innovation, and Interdepartmental process Integration) significantly predict Organizational performance.

Assumptions/Diagnosis Tests

Before analyzing multiple linear regressions, the researcher checked the assumption of multiple linear regressions such as linearity of variable relationship, normality of distribution, homoscedasticity (equal variance), multi co-linearity and independent of residuals (autocorrelation).

Assumption 1: Test of Linearity

The figure test of linearity 2 shows that there is linearity. In the normal probability plot the points lied in a reasonably straight diagonal line from bottom left to top right. The underlying assumption of regression analysis is that the relationship between dependent and independent variables is linear, meaning that the points in the diagonal line plot must form a pattern that can be approximated with a straight line.

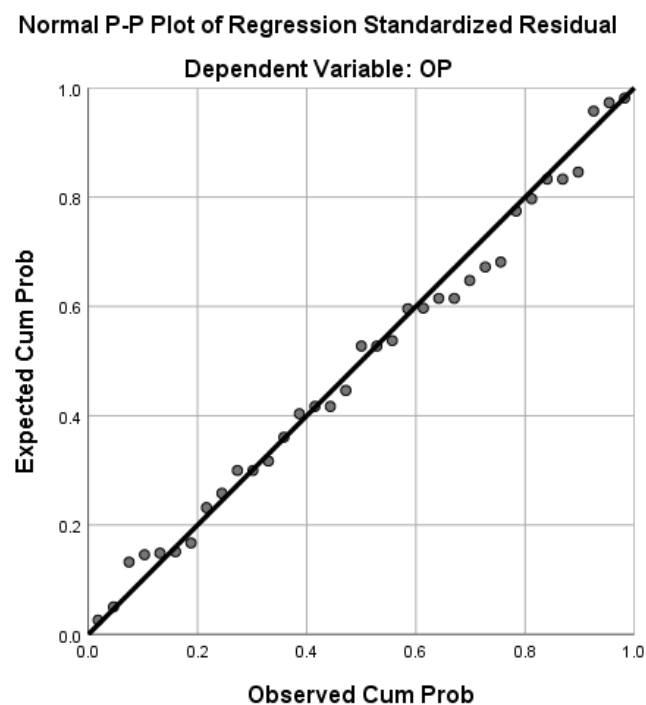


Figure 2. Test of linearity

Source: - Own survey data (2024)

Assumption 2: Test of Normality

According to Ghazali (2006) Normality can be seen on the data distribution when the curve does not pass through either the left or the right. A histogram is simply a graph that plots a frequency distribution of data for a variable. The values of the variable along the X-axis whereas a number of data points with that value (the frequency) are plotted on the Y-axis. Histograms are a great way to check whether or not the collected data is normally distributed. A normal distribution is a distribution of data that clusters around the mean.

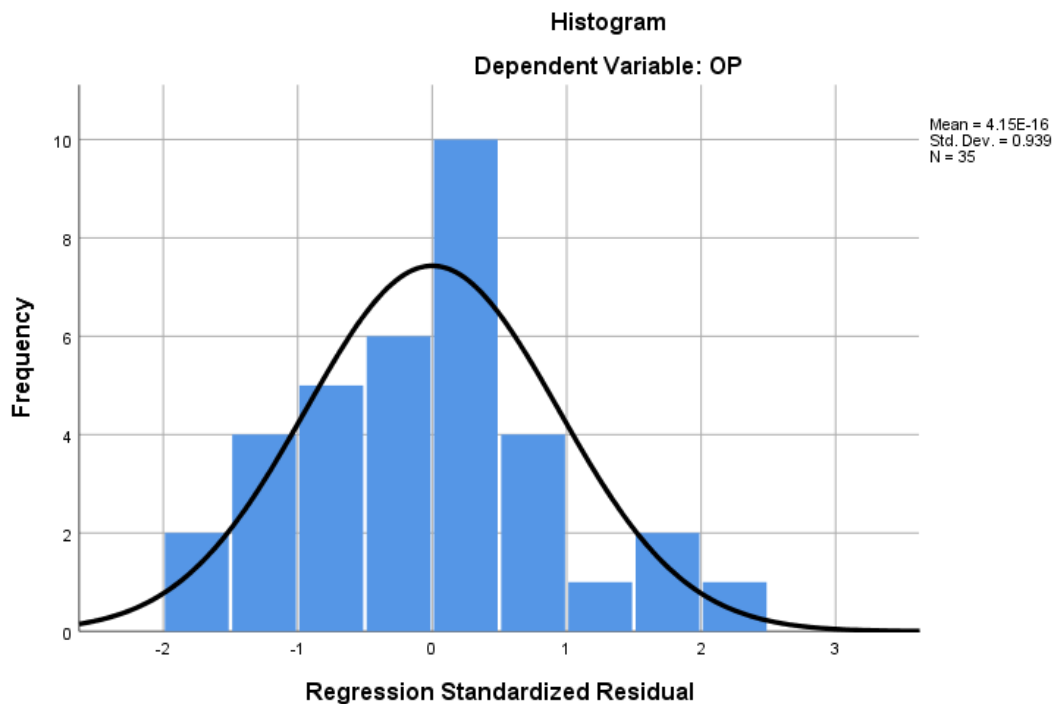


Figure 3. Test of normality distribution

Source: - Own survey data (2024)

George and Mallery (2003) suggested that kurtosis values for the variables should be bell-shaped at center for the acceptability as normal distribution. According to figure 3, the residuals are normally distributed; the histogram chart above shows that there is a bell-shaped distribution and the mean is zero, it fulfills the assumption of normality. Therefore, in the population, the data on the

dependent variable are normally distributed for each of the possible combinations of the level of the independent variables; each of the variables is normally distributed.

Assumption 3: Homoscedasticity

According to Field (2009) Homoscedasticity is the extent to which the data values for the dependent and independent variables have equal variances. Each level of the predictor variables, the variance of the residual terms should be constant. In other words the residuals at each level of the predictors should have the same variance; thus, checking for this assumption is helpful for the fitness of the regression model.

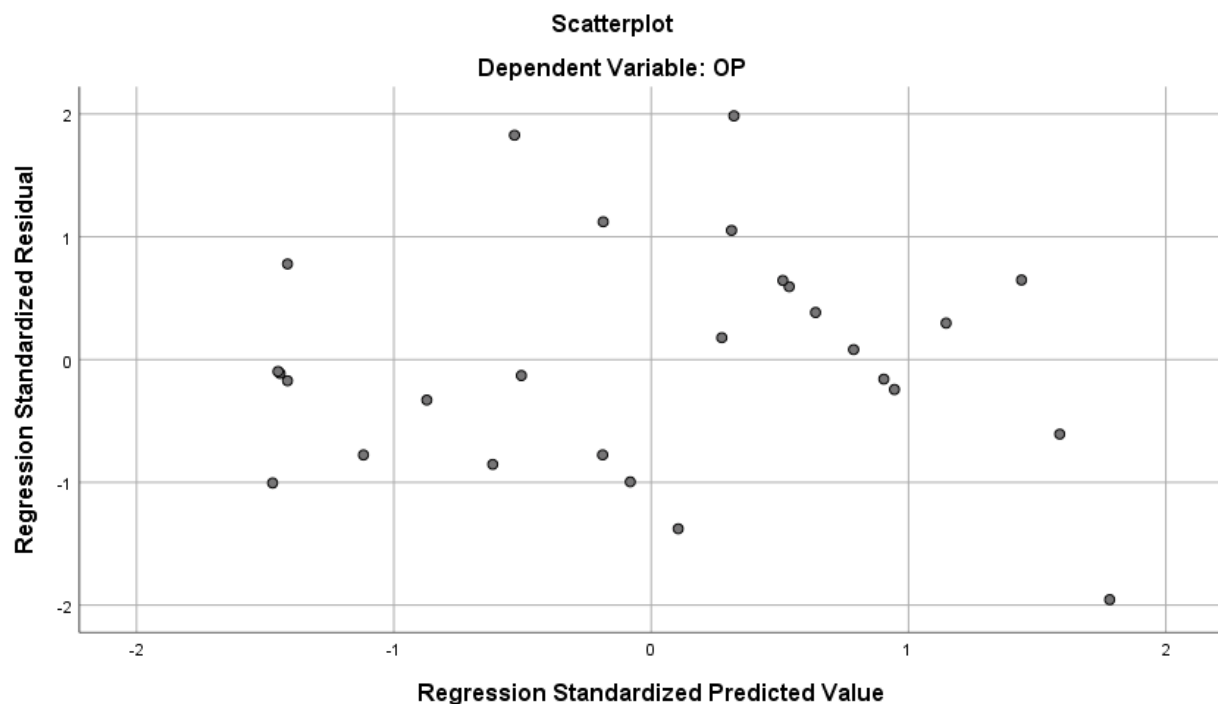


Figure 4. Scatter plot for testing Homoscedasticity.

Source: - Own survey data (2024)

To check this assumption, the researcher plot the standardized residuals, or errors (ZRESID) on the Y axis and the standardized predicted values of the dependent variable based on the model (ZPRED) on the X axis and the output is presented in the figure above.

Assumption 4: Multi-Col linearity Test

Multi-co linearity of the regression analysis refers to how strong interrelated the independent variables in a model. According to Hair (2006) multi-co linearity test analysis through SPSS version 26 VIF value, if the VIF value is between 1-10; there is no Multi-co linearity problem and if the VIF value is greater than 10 there is Multi-co linearity problem. According to Hair et al. (2010) the tolerance values should be between 0.1 – 1. As indicated in the table 11, the co-linearity statistics indicate that all tolerance and VIF values found within acceptable benchmark (Tolerance = 0.1 – 1.0 and VIF = 1 - 10) indicated in the literature. The table 11 below indicates that the four independent variables are not influenced by each other.

Table 11. Multi-col linearity Test

Modal		Co linearity Statistics	
		Tolerance	VIF
1	System development enhancement	.109	9.176
	Digital tools and services	.320	3.124
	Information technology based innovation	.330	3.029
	Interdepartmental process integration	.137	7.318

a. Dependent Variable: Organizational performance

Source: - Own survey data (2024)

Assumption 5: Autocorrelations (Independence of residual)

The value of the Durbin-Watson statistic ranges from 0 to 4. According to Babatunde (2014) as a general rule the residuals are independent (not correlated) if the Durbin-Watson statistic is approximately 2 and an acceptable range is 1.50 - 2.50. The result indicates in table 12 below shows that the variable fulfills independence of residuals. In this study, Durbin-Watson is 1.776 and found within the acceptable range.

Table 12. Autocorrelation

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.957 ^a	.915	.904	1.0523	1.776

a. Predictors: (Constant), IPI, ITI, SDE, DTS

b. Dependent Variable: OP

Source:- Own survey data (2024)

4.6 Regression Analysis Results

Multiple linear regression analysis was used to assess the relationship between independent variables (system development enhancement, Digital Tools and services, Information Technology Based innovation, and Interdepartmental process Integration) and dependent variable (Organizational performance). The result of multiple linear regression analysis are presented and interpreted as follows.

Table 13. Modal summaries

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.957 ^a	.915	.904	1.0523

a. Predictors: (Constant), IPI, ITI, SDE, DTS

Source:- Own survey data (2024)

Regression model summery was conducted to test how far determinant factors had effect on organizational. According to Hair et.al, (1998) Coefficient of determination- R^2 or Adjusted R^2

is the measure of proportion of the mean variance of dependent variable that is explained by the independent or predictor variables. Higher value of R^2 or Adjusted R^2 represents greater explanatory power of the regression equation.

The model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The table 13 shows that the r-squared for the relationship between the independent variables (system development enhancement, Digital Tools and services, Information Technology Based innovation, and Interdepartmental process Integration) and the dependent variable (Organizational performance ADPLC Nazmed medical textiles) was 0.915. This implied that 91.5% of the variation in the dependent variable (Organizational performance ADPLC Nazmed medical textiles) could be explained by independent variables. The remaining 8.5 % of the variation is explained by other determinant factors which are not included in this study.

Table 14.ANOVA Results

ANOVA ^a					
Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	358.951	4	89.738	81.038	.000 ^b
Residual	33.221	30	1.107		
Total	392.171	34			

a. Dependent Variable: OP

b. Predictors: (Constant), IPI, ITI, SDE, DTS

Source: - Own survey data (2024)

The ANOVA was used to determine whether the model was a good fit for the data. As shown ANOVA table 14 shows that the calculated F value was 81.038. The p value was 0.000 and the p value 0.000 was less than 0.05, the model was considered as a good fit for the data. Hence forth, it can be used to predict the influence of determinant factors on Organizational performance the case ADPLC Nazmed medical textiles. This model is statistically predictor of Organizational performance for the reason that the p value is less than 0.05. The researcher concluded that the overall regression model is significant, $F = 81.038$, $p < 0.05$, $R^2 = 0.915$ that is the regression model is a good fit of the modal. Thus, Organizational performance is

predicted by system development enhancement, Digital Tools and services, Information Technology Based innovation, and Interdepartmental process integration.

Regression coefficient analysis

From the multiple linear regression result as illustrated in table 15, the following unstandardized coefficient/beta values, t value, significant level of determinant factors of organizational performance were gained. ($\beta_0 = -0.2381$, system development enhancement $\beta_1 = -0.439$, $t = -3.450$, $p < 0.05$; Digital Tools and services $\beta_2 = 0.189$, $t = 2.171$, $p < 0.05$; Information Technology Based innovation $\beta_3 = 0.326$, $t = 2.96$, $p < 0.05$; Interdepartmental process integration $\beta_4 = 0.787$, $t = 7.426$, $p < 0.05$. This result indicated all independent variables have contribution on organizational performance in the case of ADPLC Nazmed medical textiles.

Table 15. Regression coefficient analysis

Coefficients^a

Model		Un standardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
1	(Constant)	-0.238	.662			.166
	system development enhancement	-0.439	.127	-.555	-3.450	.002
	Digital Tools and services	0.189	.087	.204	2.171	.038
	Information Technology Based innovation	0.326	.110	.274	2.966	.006
	Interdepartmental process integration	0.787	.106	1.067	7.426	.000

a. Dependent Variable: Organizational performance
Source:- Own survey data (2024)

The above table 15 also demonstrated that those coefficient values used to explain how much and to what extent technological innovation affect organizational performance and measured their Technology adoptions level. At 95% significance level of confidence the effects of technological innovation, all variables, namely system development enhancement, Digital Tools and services, and Information Technology Based innovation and Interdepartmental process integration were statistically significance and positive relationship with organizational performance with p-values less than the acceptable standard value of 0.05.

The finding results also indicated that the most and first predictor of Interdepartmental process integration gained a high beta value of 0.787 at 95% level of confidence interval followed by Information Technology Based innovations with beta value of 0.326 at 95% level of confidence, Digital Tools and services with beta value of 0.189 at 95% level of confidence, and the last system development enhancement with beta value of -0.439 at 95% level of confidence. Therefore these indicated that all variables namely system development enhancement, Digital Tools and services, Information Technology Based innovations and Interdepartmental process integration were contributed level of adoption in ADPLC Nazmed medical textiles.

Depending on the table 15 the following regression model was stated as follows:

$$Y = -0.238 - 0.439SDE + 0.189DTS + 0.326 ITI + 0.787 IPI + \varepsilon$$

Where Y – is the dependent variable Organizational performance,

IPI, ITI, SDE, and DTS are independent variables (system development enhancement, Digital Tools and services, Information Technology Based innovation, and Interdepartmental process integration).

B₀ - is the constant (intercept point) it gives average effect on "Y" if all the independent variables removed from the equation;

β_1 = coefficient of system development enhancement

β_2 = coefficient of Digital Tools and services

β_3 = coefficient of Information Technology Based innovation

β_4 = coefficient of Interdepartmental process integration

ε = error term

Results and Discussion

In section the result indicted by regression analysis table 15 and discussed the contribution of each independent variables i.e. system development enhancement, Digital Tools and services, Information Technology Based innovation, and Interdepartmental process integration on dependent variable i.e. organizational performance.

The contribution of system development enhancement

The results of multiple regressions analysis presented in Table 15 above revealed that system development enhancement had a significant and positive effect on the organizational performance with beta values $\beta_1 = -0.439$, $t = -3.450$, $p < 0.05$. The value of unstandardized beta showed that an increase or decrease the system development enhancement by one unit will result -0.439 decreases in organizational performance holding other variables constant. The result inconsistent with researched by (Kash & Rycroft, 2011) as confirmed that System development enhancement is most commonly implemented to cut costs, improve performance, and meet regulatory requirements or to take advantage of modern technologies. According to this study the result shows system development enhancement was low level of adoption in ADPLC Nazmed medical textiles. Descriptive analysis on system development enhancement indicators results confirmed that most of the respondents failed to disagree. Refer employees' responded outcome Table 5.

The contribution of Digital Tools and services on organizational performance

The results of multiple linear regressions presented in Table 15 above indicated that Digital Tools and services had significant effect on organizational performance with beta values ($\beta_2 = 0.189$, $t = 2.171$, $p < 0.05$). This study result a unit increase in Digital Tools and services would lead to an increase in organizational performance of ADPLC Nazmed medical textiles by 0.189. The result consistent with researched by Mutie 2018 which was confirmed that Digital Tools and services had significant effect on organizational performance. Digital tools can also open up new avenues for exchange of data and collaboration all of which creates more venues (Kash & Rycroft, 2011). Various tools can be used to help manage documents, customer relationships, human resources and other internal processes (Alstrup, 2010).

The contribution of Information Technology Based innovation

The results of multiple linear regressions indicated in Table 15 showed that Information Technology Based innovation had positive and significant effect on the organizational performance with values Information Technology Based innovation $\beta_3 = 0.326$, $t = 2.966$, $p < 0.05$. This study result a unit increase in Information Technology Based innovation would lead to an increase in organizational performance of ADPLC Nazmed medical textiles by 0.326. This result is consistence from Mutie 2018 which was confirmed that Information Technology Based innovation had significant effect on organizational performance. Information technology based innovations are significant to enable a firm(s) survive severe and tough universal circumstances but maintaining sustainable competitiveness (Wu & Lin, 2009).

The contribution of Interdepartmental process integration

The results of multiple linear regressions indicated in Table 15 above, showed that Interdepartmental process integration had positive and significant effect on the organizational with beta values $\beta_4 = 0.787$, $t = 7.426$, $p < 0.05$. This study result a unit increase in interdepartmental process integration would lead to an increase in organizational performance of ADPLC Nazmed medical textiles by 0.787. The result consistent with researched by (Tushman & Nadler, 2006) as confirmed that in multi-functional firms where separate departments collaborate to produce a perfect coordination in design, assembled product, technical and production capabilities are critical in ensuring that final product meets the standards.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Major Findings

The general objective of this study was to explore the effect of technological innovations on organizational performance in the case of ADPLC Nazmed medical textile. In order to explore effect of technological innovations on organizational performance quantitative and qualitative research approach with cross sectional survey data was used. To analyze the collected data, descriptive & inferential statistics were used. Descriptive statistics; frequencies, mean and percentage were used to analyze the background information such as; gender, age group, management level, level of education, working experience of the respondents and level of technological innovations adoption and organizational performance. Independent variables for the study were system development enhancement, digital tools and services, information technology based innovations and interdepartmental process integration. Based on the descriptive statistics, the overall effects of technological innovations level adoption among in ADPLC Nazmed medical textiles were adopted towards organizational performance with overall mean value of 3.01 i.e. the output mean value found within the interval of 2.88 – 3.10, and the overall mean score of organizational performance was 3.07. This indicates the most respondents believed that technological innovations practices improved organizational performance.

Based on the regression analysis result, the study shows that all variables namely system development enhancement, Digital Tools and services, and Information Technology Based innovation and Interdepartmental process integration were statistically significance and positive relationship with organizational performance. The results of the study also

indicated that technological innovations on organizational performance determinant variables i.e. system development enhancement, digital tools and services, information technology based innovations and interdepartmental process integration have a positive correlation. The result of multiple linear regression analysis modal summery demonstrated that 91.5% of the variation on organizational performance predicted or explained by the combined measure of system development enhancement, digital tools and services, information technology based innovations and interdepartmental process integration. The remaining 8.5% were explained by other variables.

5.2 Conclusion

The overall objective of the study is to assess the effect of technological innovations on organizational performance in case of ADPLC Nazmed medical textiles. In the meantime, the study raised basic research questions and addressed the specific objectives. Accordingly, based on descriptive and inferential statistics results and summary of major findings, the following conclusions were drawn:

- The purpose of this study was to assess the effect of technological innovations on organizational performance in case of ADPLC Nazmed medical textiles. The specific objectives of this study were to explore the level of technological innovations adoption among ADPLC Nazmed medical textiles and to assess the effect of technological innovations on organizational performance in case of ADPLC Nazmed medical textiles. The study used explanatory and descriptive research design to explain, understand and predict the relationship between variables. The study also adopted mix approach and used both primary and secondary data sources. To analyze the data descriptive and inferential statistical tools such as frequency, percentage, mean, correlation and regression were used.
- The correlation analysis result of the study indicated that there have been positive associations between dependent variable (organizational performance) and independent variables (system development enhancement, digital tools and services, information technology based innovations and interdepartmental process integration). Multiple linear regression analysis result of the study showed that there have been statistically significant

relationships between independent variables (system development enhancement, and interdepartmental process integration) with dependent variables (organizational performance) except digital tools and services, and information technology based innovations.

The study concludes that, the independent variables (system development enhancement, digital tools and services, information technology based innovations and interdepartmental process integration) influences on organizational performance of ADPLC Nazmed medical textiles.

5.3 Recommendations

This study shows clear linkage between technological innovations and organization performance which helps to deeply understand the relationship and interaction between technological innovations and organizational performance. Based on the conclusion drawn from the study and the established research problems and research objectives, the researcher forwarded realistic and applicable recommendations. Accordingly, the following recommendations were suggested by the researcher:

- ✓ The researcher recommend that ADPLC Nazmed medical textile top managers should effectively implement the determinant factors of organization performance such as system development enhancement, interdepartmental process integration, specially digital tools and services, and information technology based innovations to increase and maintain level of organizational performance.
- ✓ Hence, ADPLC NMTS should see technological innovations such as system development enhancement, digital tools and services, information technology based innovations and interdepartmental process integration as a continuous process for organizational development and survival and also for effective organizational performance.

5.4 Further Research Directions

The study concluded noticeable relationship between technological innovations and organizational performance. However, still numerous other variables that might be the role in particular so, it is going to be very beneficial for other researchers to conduct research in this

particular field in the future by including additional variables like the development of new products, services, or processes, Quality of Life, and Competitiveness. Further coming researchers are intensively stimulated to empirically assess more advanced models in diverse situations/frameworks.

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APPENDICES

Appendix -A- Questionnaire

ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY

SCHOOL OF HUMANITY AND SOCIAL SCIENCE

DEPARTMENT OF TECHNOLOGY AND INNOVATION

MANAGEMENT MSC PROGRAM

Questionnaire to be filled by ADPLC Nazmed medical textiles employees

Dear Respondent

I am a student at ASTU University currently working on my MSc thesis, which explores the effect of technological innovations on organizational performance, specifically focusing ADPLC Nazmed Medical Textile.

This questionnaire is designed to gather information for this study. The purpose this research is purely academic, and your participation will not affect you any way. Rest assured that all your responses will be used solely for this study and will remain confidential. Your honest and timely responses are crucial to the success of this research.

I kindly request that you answer each question carefully. Thank you in advance for your cooperation and prompt response.

Directions for filling the questionnaires

- Do not write your name
- Put “√” mark in the box provided for choice questions
- Your response will be utilized only for the purpose of this survey.

Instructions

1. Tick appropriately in the box or fill in the space provided.
2. Feel free to give further relevant information to the research.

PART A: BIOGRAPHIC INFORMATION

1. Gender: Male ☐ Female ☐

2. In which age group are you?

Less than 30 ☐ 31-35 ☐ 36-40 ☐ 41-45 ☐ 46-50 ☐ > 50 ☐

3. Academic qualification?

High school ☐ Diploma ☐ Degree ☐ Master's degree ☐ and above ☐

4. Your management level in the organization

Senior Level Management ☐

Middle Level Management ☐

Lower Level Management ☐

5. Work experience at organization (Experience):

Below 5 years ☐

5 to 10 years ☐

Above 10 years ☐

PART B: LEVEL OF TECHNOLOGICAL INNOVATIONS ADOPTION AMONG ADPLC NAZMED MEDICAL TEXTILES.

Instruction: Please indicate the extent to which you either agree or disagree with the following statements by marking a tick mark $\checkmark$ in the appropriate column to the right side where:

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

1. System Development Enhancement

Indicator	1	2	3	4	5
1.1 The organization frequently adds new capabilities to an existing system					
1.2 New features are often added to the existing system					
1.3 Identified defects are corrected on a continuous basis					
1.4 The organization modifies systems on a continuous basis to enhance efficiency					

2. Digital Tools and Services

Component	1	2	3	4	5
2.1 The organization is connected with an intranet					
2.2 The organization is connected with an extranet					
2.3 The organization has an efficient human resource management system					
2.4 The organization has an efficient customer relationships management system					

3. Information Technology Based Innovations

Component	1	2	3	4	5
3.1 The organization has automated storage and retrieval system					
3.2 Electronic data interchange is widely practiced in the organization					
3.3 The organization makes use of global positioning systems time servers					

4. Interdepartmental Process Integration

Component	1	2	3	4	5
4.1 There is continuous interaction between departments					
4.2 There is efficient flow of information between functions and departments					
4.3 Collaboration between departments is encouraged in the organization					
4.4 All departments understand their roles and how these affect the overall objective					

PART C: TECHNOLOGICAL INNOVATIONS AND ORGANIZATION PERFORMANCE

In your own opinion how would you rate the organization performance indicators below before and after implementing some technological innovation practices in the firm?

Performance Indicator	Greatly Reduced	Reduced	Constant	Improved	Greatly improved
	1	2	3	4	5
1. Cost reduction					
2. Productivity					
3. Profitability					

Appendix B .Interview Questionnaire

Dear, Interviewees, I am -----and I, Thank you for agreeing to be part of the interviewee. I appreciate your willingness to participate on this topic entitled that, “**effect of technological innovations on organizational performance the case of ADPLC Nazmed medical textile**”. Then please answer the questions below in a responsible manner.

Date of Interview: ----- **Sex:** Male----- Female-----**Title**-----**Position**-----
--- Educational level: -----**Year of work experience in this sector:** -----

1. What are the effects of technological innovations implement in ADPLC Nazmed medical textile?
2. Does the implemented technological innovations management system policy in ADPLC NMT?
3. What are the major benefits of technological innovations practices for company?
4. What extent the level of technological innovations adoption for company?
5. Any recommendations you have regarding the technological innovations? pls