**BINDURA UNIVERSITY OF SCIENCE EDUCATION**

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**FACULTY OF COMMERCE**

**DEPARTMENT OF ECONOMICS**

**THE EFFECTS OF E-PROCUREMENT PRACTICES ON PROCUREMENT PERFORMANCE OF ZIMBABWE NATIONAL STATISTICS AGENCY.**

**BY**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR A BACHELOR OF COMMERCE (HONOURS) DEGREE IN PURCHASING AND SUPPLY OF BINDURA UNIVERSITY OF SCIENCE EDUCATION.**

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# **RELEASE FORM**

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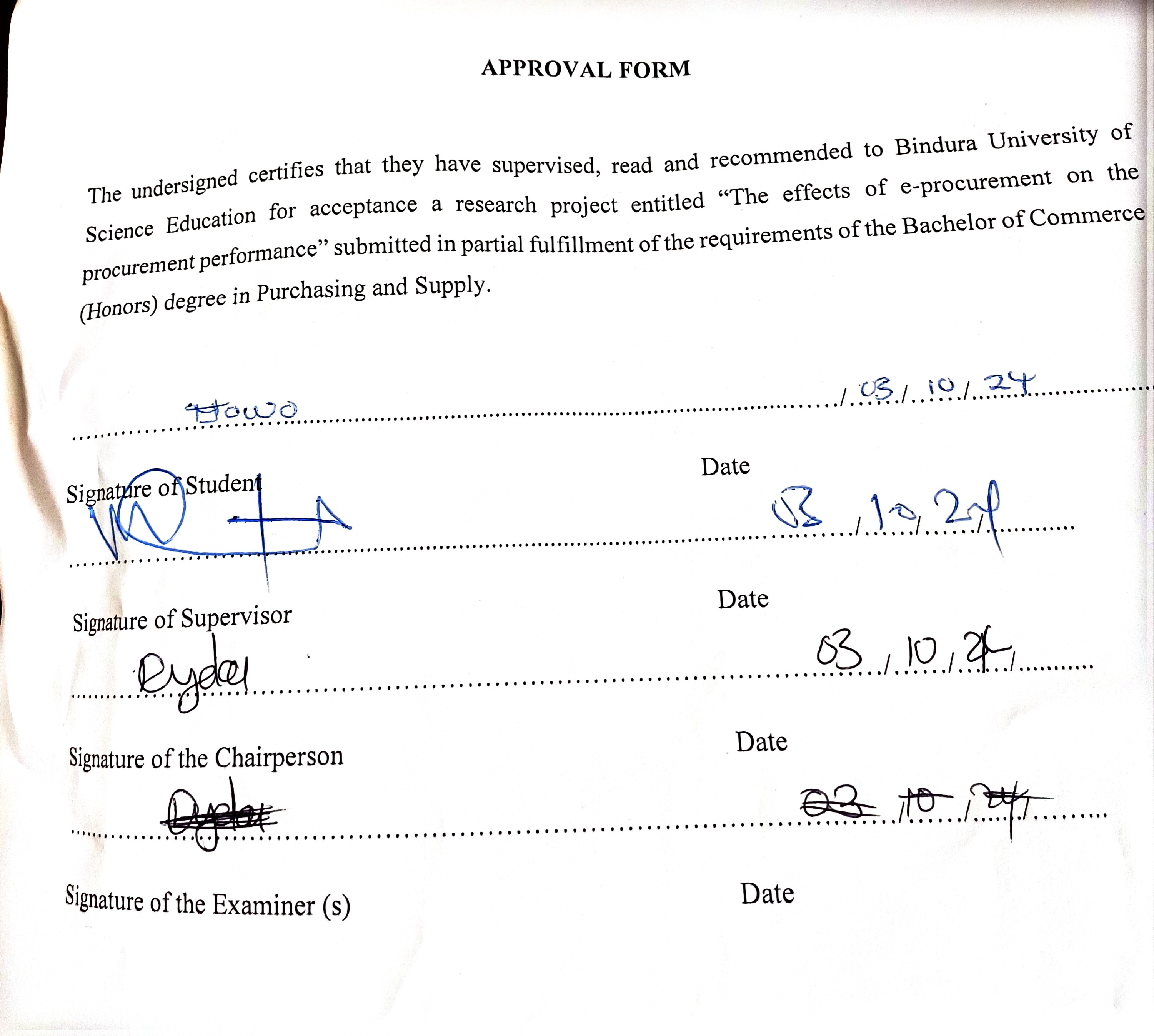
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# **DECLARATION FORM**

I ........................................................................declare that this project is an original copy of my own work and has not been published before or submitted to any other institution/university.

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# **DEDICATION**

For always inspiring and encouraging me to follow my aspirations, I am grateful to my parents. It has been made feasible for me to do this study endeavor by their love, patience, and important guidance. I thank them and appreciate everything they have done for me, and I dedicate this work to them.

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I want to start by sincerely thanking God for guiding me during my years of college study. I am appreciative of His kindness and mercy for getting me thus far. The crucial participation in the study process from a variety of staff members and community people made the compilation of this research project possible. My supervisor, Mr. Chikabwi, deserves special recognition for his leadership and inspiration during this project. I want to express my gratitude to my parents, other family members, and all of my friends who have supported me throughout. God bless everyone.

# 

# **ABSTRACT**

The study investigates the effects of e-procurement on procurement performance of the Zimbabwe National Statistics Agency (ZIMSTAT). Specifically, the study analyses the role of e-procurement practices on the performance of Zimbabwe National Statistics Agency and also establish the link relationship between e-procurement practices and organizational performance. The study applied a qualitative approach and data was collected using questionnaires and interviews on a sample of 45 employees. The results show that, e-procurement practices positively affect ZIMSTAT’s performance. Results, further indicate that e-procurement practices shorten order delivery time and data quality. The results further show that automation of procurement improves order tracking, decreases errors and delays on ZIMSTAT. Moreso, the results show that e-procurement promotes cost reduction. The study recommends ZIMSTAT to consider implementing e-procurement practices as they are critical in organizational procurement performance since it has more advantageous over the traditional procurement methods. ZIMSTAT is therefore recommended to consider use of electronic sourcing, electronic bidding, electronic contracts and automation of order tracking system.

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# **LIST OF ACRONYMS**

|  |  |
| --- | --- |
| ZIMSTAT | Zimbabwe National Statistical Agency |
| I.T | Information and Technology |
| PASTEL | Persistent Application Systems, technologies environments and |
|  | languages. |
| PO | Purchase Order |
| GRV | Goods Received voucher |
| PR | Purchase Requisition |
| RFQ | Request for Quotation |
| BUSE | Bindura University of Science Education |
| TOE | Technology organization and environment |
| SPSS | Statistical Package for social sciences  List of Figures |

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# **CHAPTER ONE**

# **INTRODUCTION**

# **1.0 Introduction**

This study investigates the effects of e-procurement practices on procurement performance, primarily taking Zimbabwe National Statistics Agency (ZIMSTAT) as a case study. This chapter focuses on the background of the study that provides insight into the study basically laying the foundation and highlighting its significance of the study. This chapter also focuses on statement of the problem, research objectives, assumptions, limitations, delimitations, significance of the study, definition of key terms and the chapter summary.

**1.1 Background of the study**

Over the past ten years, procurement has experienced significant transformations as it matures, moving from a tactical function to a digitalized, strategic process. The procurement function was manually controlled under the old approach, which mostly relied on paperwork, Excel spreadsheets, phone calls, and face-to-face interactions.

When Zimbabwe National Statistics Agency (ZIMSTAT) was founded in 2007 through the Census and Statistics Act, its task is for collecting, analysing, and disseminating statistical information to support evidence-based decision-making in the country. Since its formation, ZIMSTAT has been tasked with conducting various surveys and censuses to provide accurate and reliable data on various socio-economic indicators.

The Board oversaw and directed all aspects of the Agency's operations. The agency is Zimbabwe's primary official statistics source and is tasked with overseeing and coordinating the National Statistical System. As per the aforementioned Act, ZIMSTAT is also required to generate official statistics. By "statistics," we mean the combined numerical data on social, environmental, economic, and demographic issues at the local, provincial, or national level that is gathered and examined in accordance with statistical protocols and standards (Bogdan and Biklen, 1998). Once it is satisfied that all the standards for high-quality statistics have been satisfied, it has the power to approve and designate any statistics generated in the nation as official statistics.

When doing its procurement process, ZIMSTAT have been using traditional and manual system to perform its procurement activities and to carry out its mandate. Traditional procurement system involves manual, depending heavily on writing of paperwork, excel spreadsheets as well as phone calls and in person discussions. The manual paper work system would account for the whole purchasing forms.

Also, supplier selection was done manually and request for quotations were published through notice at the organisation ‘s offices. The respond was very poor as there were few suppliers who had access to organisation’s premises. There have been some challenges in tender processing, evaluation, delays in the award of contracts and complaints from unsuccessful bidders since it was done manually which led to delaying in tender execution. This slowed down the whole procurement process as it had to be done manual and in written form.

In 2015 Zimbabwe National Statistics Agency adopted e-procurement in managing its procurement activities and realised a lot of benefits activities (Gebauer et.al. (2011). Some examples of e-procurement in action at ZIMSTAT could include; implementing an online portal for vendors to submit bids and proposals electronically, using e-catalogs to streamline the selection and purchasing of commonly used goods and services, automating the approval process for purchases to reduce paperwork and processing time and utilizing e-sourcing tools to manage sourcing events such as tenders and auctions online.

This move was aimed at modernizing the agency's procurement processes and improved efficiency in acquiring goods and services. This process is governed by the Public Procurement and Disposal of Public Assets Act, which sets out the rules and procedures for procurement. The implementation of e-procurement has led to significant changes in the organization's performance, resulting in improved transparency, and streamlined operations.

By moving procurement activities online, ZIMSTAT has been able to provide stakeholders with real-time access to information on procurement opportunities, bids, and contract awards. This transparency has helped to build trust with suppliers and the public, as well as reduce the risk of corruption and favouritism in the procurement process.

Furthermore, e-procurement has enabled ZIMSTAT to achieve cost savings through increased competition and efficiency. By allowing suppliers to submit bids electronically, the agency has been able to reach a wider pool of potential vendors, leading to more competitive pricing. Additionally, the automation of procurement processes has reduced the time and resources required to manage procurement activities,

resulting in cost savings for the organization. In addition to cost savings, e-procurement has also led to improved efficiency of the organization’s procurement operations.

By digitizing the procurement process, the ZIMSTAT has been able to streamline workflows, reduce paperwork, and eliminate manual errors. This has allowed staff to focus on more strategic tasks, such as vendor management and contract negotiation, rather than administrative tasks. As a result, the agency has been able to process procurement requests more quickly and effectively, leading to improved overall performance. These efforts have helped to improve the efficiency and effectiveness of the procurement process at ZIMSTAT, ensuring that it can continue to fulfil its mandate of providing accurate and reliable statistical information to support decision-making in Zimbabwe.

The Procurement Regulatory Authority of Zimbabwe (PRAZ) invites all parastatals enterprises in Zimbabwe like ZIMSTAT to use electronic procurement methods such as emails in order to give everyone regardless of location the chance to engage in the supplier selection process. When procurement operations are transferred to a digital platform, all procurement procedures are optimised and expedited, opening up opportunities to improve value and save costs.

# **1.2 Statement of the problem**

The traditional procurement methods in case of ZIMSTAT is characterized by many challenges including inefficiency and unethical behavior. The procurement process procedure was not followed properly. However, the management did not fold hands as all these challenges were experienced. They introduced the use of e-procurement which was regarded as transparent, accountability and fast in data processing. The government of Zimbabwe also made efforts by developing a new Public Procurement and Disposal of Asset Act to ensure that the use of e-procurement has been made in the bid to ensure better quality service provision. This study focuses on ZIMSTAT as a case study to examine the implementation and utilization of e-procurement and its influence on procurement performance indicators.

# **1.3 Objectives**

The general objective of the study is to investigate the effectiveness of e-procurement practices on procurement performance on ZIMSTAT. To accomplish this, the study's specific objectives were as follows:

**•** To examine the role of e-procurement practices on the performance of Zimbabwe National Statistics Agency.

• To establish the link relationship between e-procurement practices and organizational performance.

# 1.4 Research questions

To accomplish the aforementioned objectives, the following research questions were developed;

**Main research question**

What are the effects of e-procurement practices on procurement performance?

**Sub-questions**

* What are the roles of e-procurement practices on the performance of Zimbabwe National Statistics Agency?
* How can e -procurement practices link with organizational performance?

# **1.5 Study limitations**

The study was limited by limitations which the researcher noticed. Firstly, the study was limited by the short-time in which the study was carried. The respondents’ demanding occupied schedules was a interference for the researcher to be accorded time. The researcher was cognizant of this fact and made sure to allocate ample time to the study in order to complete it well without compromise. Secondly, the study was limited by the fact that some participants were reluctant to participate for fear of divulging sensitive information about their organization. To address this, the researcher made sure the participants understood that the study's findings could only be utilised for academic purposes and could not be used for any other reason. Additionally, the researcher regularly followed up and conducted in-person interviews to address the respondents' lack of cooperation, which made data collection difficult.

# **1.6 Study Delimitation**

The investigation was limited to examining ZIMSTAT's procurement procedures. The study investigated the effects of the idea of e-procurement on the procurement performance of the organizations involved. A population of personnel from procurement, stores, finance, ICT, planning, and project management was taken into consideration in the study.

# **1.7 Assumption of the study**

This study is guided by the following assumptions;

1. The sample shall be representative of the population.

2. The research instruments shall validity and in measuring the constructs under study.

3. The respondents will answer the /questionnaires/interviews truthfully.

4. The study shall base on trust considering the sensitivity of the information requested from the company.

5. The information provided will be accurate and unbiased.

# **1.8** **Definition of key terms**

**Electronic procurement** - Lysons (2006) defined e-procurement as the requisitioning, ordering, and purchasing of goods and services online.

**Technology**- is the use of devices such as computer networks, hardware, and software necessary for an internet connection; the term "technology" will encompass a broad variety of computer applications and information processing in businesses.

**Information and technology**- refers to the storage, retrieval, transmission, and manipulation of data information using computer-based systems; it takes into account all networks, hardware, and software utilised for data distribution and processing.

**Procurement department**- this office handles the procurement of supplies, which include both products and services. Within the company, there is an office with the authority to prepare purchase orders, obtain quotes, invite tenders, and buy supplies for the company.

# **1.9 Significance of the study**

**To the government of Zimbabwe**

This research holds great significance for the Zimbabwean government since it will serve as a foundation for assessing the efficacy of technology integration into procurement departments and for formulating plans and policies that would advance the system.

**To the Bindura University of Science Education**

The purpose of the research is to shed light on the technological advancements that will impact the purchasing industry and how the university may integrate these changes into the current curriculum to expose students to software and computer packages relevant to the field. The research project might serve as the foundation for a literature review if more students want to look into the topic.

**To the ZIMSTAT**

The research's conclusions will be very helpful in giving ZIMSTAT ideas for how to increase productivity because they will help determine how much money to invest in cutting-edge technologies in the procurement industry. Additionally, it offers a clearer understanding of the software programmes and electronic procurement methods that are accessible, and it should be advantageous to learn about the function and efficacy of e-procurement in relation to procurement performance.

**To the Researcher**

The research will be very important to the student because it helps her keep up with the rapid advancements in technology, which is necessary to partially fulfil the requirements of the Bindura University of Science Education's Bachelor of Commerce Honors Degree in Purchasing and Supply.

# **1.10 Chapter summary**

The chapter included an overview of the study's history, the research problem, the research questions, and the study's aims. The study's importance was also examined. The linked theoretical and empirical literature will be reviewed in the upcoming chapter in relation to the research. The part also emphasises how the conceptual framework that shows how e-procurement practices and organisational performance are related is developed.

# 

# **CHAPTER TWO**

# **LITERATURE REVIEW**

# **2.0 Introduction**

The previous chapter looked on the background of the study, statement of the problem, research objectives, and research questions, assumptions to the study, delimitations and limitations of the study as well as definition of terms. This section lays down the foundation of the study by looking at what other researchers have discovered on the effectiveness of e-procurement on procurement performance. It covered other works related to the topic as theoretical framework, empirical evidence and gap analysis for the area under study.

# **2.1 Theoretical Framework**

This section looks at e-procurement related theories and how it affects procurement performance. Thus, supply chain theories would be relevant in trying to understand how e-procurement practices affect performance of procurement. These theories help in understanding the effectiveness of e-procurement activities on Zimbabwe National Statistics Agency performance. The related theories are Technology diffusion theory, Technology acceptance theory and Technology, organization and environment theory.

# **2.1.1** **Technology, organization and environment theory**

Rocco DePietro devised the hypothesis in 1990, and Tornatzky edited it. Theoretically, the organizational, technological, and environmental contexts all have an effect on the adoption and implementation of technological breakthroughs by organizations. Technologies and procedures that are important to the company, whether they come from internal or external sources, are included in the technological context.

While the environmental context refers to the environment in which a firm operates, including its industry, competitors, and relationships with the government, the organizational context refers to the descriptive measures about the organization, such as its size, scope, and managerial structure, as well as its resources, employee relationships, and the degree of centralization and decentralization (Tracey et al., 2011).

Technology, organization and environment theory can apply to ZIMSTAT because it strengthens dynamic communication skills. Also, it influences implementation of procurement strategy, communication the technology must be user-friendly and compatible with other innovations within and outside of the organization.

However, this theory overlooked the need for ZIMSTAT to adopt it. Leverage communication innovations and channel, completing explanations are lacking that is it does not provide a detail explanation of the effectiveness of ICT on the procurement process (Erridge et al, 2007). Factors band measures are adjusted so that there is no need to change the theory itself. The organization should have resources so as to use this technology.

# **2.1.2 Technology Diffusion theory**

Rogers is credited with creating the theory. In an effort to explain the how, why, and rate at which new concepts and technologies proliferated, communication gave rise to it in 1962. When new ideas and products gradually gain traction and spread among a particular population or social system, Rogers adopted the term diffusion to describe the process of communicating innovation among members of the social system.

The social structure will view that concept as novel or inventive with the aid of diffusion theory. Laryea et al. (2014) employed the theory to examine the patterns of technological innovation in the use of e-procurement in the construction industry. They found that the degree to which an invention is challenging to use and comprehend, along with its capacity values, organisational needs that must be met through specific technological adoption, and potential adopters' social norms, are adopter characteristics of innovation.

According, to Laryea et.al. (2014) this theory encourages the use of variable application software since it improves supplier collaboration and reduces procurement process costs when partner firm’s application software is compatibility. This hypothesis is relevant to the study since it encourages ZIMSTAT to purchase contemporary and use ICT equipment’s in order to enhance their creative approaches in light to technology advancements, thereby improving procurement performance. Utilizing a paperless system boosts the effectiveness procurement process (Ahimbisibwe et al, (2018). As the organization moves to the world-class procurement, the Technology Diffusion hypothesis is important in helping it leads alternative and deploy procurement technology.

However, the theory ignores the fact that the large-scale technical system is socially constructed. It fails to provide a clear explanation for how some organizations’ procurement process like ZIMSTAT benefits from e-procurement. Additionally, the theory shows that economic considerations can affect the long-term rate of economic growth and slow down the adoption of new technology in procurement since it is perceived as expensive (Goffin et al., 2007).

# **2.1.3 Technology acceptance model**

This popular technological model was created by Davis et al. (1989). It offered a framework for tracking how external factors affect one's own ideas, attitudes, and intentions. As per the hypothesis, attitudes towards technology use are determined by two beliefs: the apparent affluence of use and the perceived usefulness of technology. The degree to which a user feels that utilizing a certain system is easy is known as perceived ease of use will require no physical or mental effort, whereas perceived usefulness of technology is defined as the extent to which one believes that the use of specific system will increase performance (Alagu et al., 2015).

The hypothesis has been applied to determine how well state enterprises like ZIMSTAT use ICT and how effective its procurement practices is. Use of ICT optimizes procurement performance by eliminating transaction costs, eliminating delays and enhancing supplier relationships (Busch, 2010). The organization can use this model in cyber security, transit time and route guarantee to manage and track supply chain operations, webpages, databases for purchasing and time among other things.

Despite being widely used, Technology acceptance model lacks real application, having a dubious heuristic usefulness, and little capacity for explanation and prediction. It has created phantasm of progress in knowledge acquisition and diverted the focus of scholars from other important research issues. The paradigm of perceived usefulness and usability ignores other factors including affordability and structural needs that encourage technology adoption (Van Weele, 2014).

# **2.2 Conceptual Framework**

A conceptual framework, conferring to Erridge et al. (2007), is a theoretical model that aids in the researcher's delineation of the principal elements and connections thought to have an effect on a given event. According to Creswell (2008) a conceptual framework is an assembly of overarching concepts and guiding principles drawn from pertinent fields of application and used to put together an upcoming presentation. It’s a useful tool to help a researcher analyze later findings, if a conceptual framework is well-articled.

In this study, independent variables are procurement practices that includes; electronic sourcing, electronic bidding process, electronic contract and information technology and dependent variables are procurement performance/supply chain effectiveness which includes; cost reduction, time efficiency, quality and compliance, transparent and accountability and supplier relationship management, Kiragu , R (2021) asserts that a conceptual framework is a diagram that represents how the correlation between study variables is conceptualization as shown by Figure 2.2 below;

**Supply Chain effectiveness**

**Cost Reduction**

**Time Efficiency**

**Quality and Compliance**

**Transparent and Accountability**

**Supplier Relationship Management**

**Electronic Sourcing**

**Electronic Bidding Process**

**Increased procurement efficiency**

**Information technology**

**Electronic Contracts**

**Independent Variables Dependent Variables *Source Author (2023)***

Use of electronic sourcing can enhance procurement process by streamline the supplier selection process, enhance competition and optimize supplier relationship management (Carter et al, 2000). Moreso, electronic bidding process eliminates more paper work, reduce administrative burden, enables real time bid tracking and evaluation, facilitates fair competition, enhance bid responsiveness an ensures transparency in the procurement process.

In addition, electronic contracts eliminate the need for physical documentation and enable faster contract negotiation, execution and storage. It also reduces error, and improve compliance with legal and regulatory requirements. The use online techniques or information technology for conducting the procurement process have been made more efficient by developing modern software technologies which will also guarantee accountability and transparency while minimizing gaffes and inconsistencies on procurement process (Humphreys et al, 2015).

# **2.3 Empirical review**

Several empirical studies were conducted according to a thorough review of studies on the effects of e-procurement on organizational performance. For instance, Jane Ireri Muriuki (2021), Glory A. Mtana (2019), Cynthia Mupfiga Tagwireyi (2019) Calipinar and Soysal (2012), Masokwedza (2014), Yao-Chuan and Che-Hao (2013) investigated the effects of e-procurement on procurement performance. More has been done in various countries to deal with e-procurement in procurement departments as discussed below:

# **2.3.1 Yao-Chuan and Che-Hao (2013)**

Chang, Yao-Chuan, and Che-Hao (2013) conducted research on supply chains and e-procurement's efficacy in Taiwanese businesses. Empirical data for Chang, Yao-Chuan, and Che-Hao's study were gathered through interviews. The study looked at the electronic procurement processes of e-sourcing, e-negotiation, and e-design. Rendering to the study's findings, the cost of the purchasing process is reduced when electronic procurement technologies are used. Through the facilitation of information flow and activity coordination, e-procurement systems can enhance integration.

Chang, Yao-Chuan, and Che-Hao's study, however, only examined Taiwanese businesses, therefore it was unable to demonstrate the effects of contemporary ICT on Zimbabwean businesses' procurement procedures. It convinces the researcher to look into and determine the effects of contemporary e-procurement on procurement procedures in parastatal enterprises in Zimbabwe to the deficiency of investigations and lucid explanations of the study.

# **2.3.2 Calipinar and Soysal (2012)**

In Ankara, Turkey, hospitals acquire medications by email, and Calipinar and Soysal (2012) studied this relationship. Data for this study were gathered through semi-structured interviews and non-participant observations by Calipinar and Soysal. This research investigated the uptake of e-procurement software and the benefits and drawbacks of incorporating technology into procurement processes.

The results of the study indicated that large time and cost reductions can be achieved with little financial outlay by using e-procurement strategies, such as phone calls and emails. As a single email could be sent to all vendors at once and was simpler to track and record, the study showed that using emails was more efficient. The phone continued to be an important instrument for negotiation even when connection with several vendors was delayed.

However, the study by Calipinar and Soysal concentrates on the significance of utilizing emails for medication acquisition in hospitals alone. It provides a cursory analysis of how well current ICT works with procurement procedures in businesses and industries like parastatals. Thus, the goal of this study is to provide a thorough examination of how ZIMSTAT have been affected by e-procurement in terms of their procurement procedures.

# **2.3.3 Mtana (2019)**

Mtana (2019) studied the variables affecting Tanzanian governmental procurement and asset disposal practices' usage of ICT. The research used surveys and interviews in order to get information. The results of the study demonstrate that the use e-procurement in public procurement had a positive effect.

The study's conclusions indicate that one essential tool for procurement is the internet. The usage of Project Management Information System (PMIS) in e-procurement is essential, according to data analysis, as the technology can expedite ZIMSTAT operations and manage a large number of suppliers.

Mtana's research, however, was limited to the state of public sector organizations in Tanzania and was unable to draw conclusions that might be applied to ZIMSTAT. It is evident that there are no research showing how e-procurement improve procurement performance on ZIMSTAT. As a result, the high likelihood of different results owing to different geographic locations motivates this research.

# **2.3.4 Muriuki (2021)**

The effects of e-procurement practices on procurement performance in Kenyan state-owned energy businesses was investigated by Muriuki (2021). Data for the study were gathered using questionnaires, and the findings showed that ICT significantly affected procurement performance. The study also demonstrated how lead times were shortened, transparency was raised, and supplier and contract performance were enhanced when ICT was used in procurement. Furthermore, there has been a noticeable improvement in the tracking of procurement activities and supplier-customer communication.

Nevertheless, Muriuki's study was limited to examining the effects of e-procurement in Kenya and did not assess how well e-procurement worked on ZIMSTA procurement procedures. Thus, the goal of this study is to comprehend how well e-procurement works with ZIMSTAT’s procurement processes in Zimbabwe.

# **2.3.5 Masokwedza (2014)**

Masokwedza (2014) investigated the role that electronic procurement plays in enhancing the effectiveness of public sector procurement systems. The Thornhill Air Base in Gweru, Zimbabwe, served as the project's case study. Data were gathered through questionnaires and in-depth interviews. Thornhill Air Base used a combination of manual and electronic methods for procurement activities, with a minor degree of computerized purchasing, according to the findings that were provided through tables and graphs.

It is vital to investigate the effects of e-procurement on procurement procedures on ZIMSTAT, especially in light of the changing business environment since previous research was limited to public sector enterprises in Zimbabwe.

# **2.3.6 Tagwireyi (2019)**

A study on the practice of data technology to improve supply chain management in Zimbabwe's retail industry was conducted by Mupfiga Tagwireyi (2019). A 5-point Likert scale was used in structured questionnaires to collect data from ten randomly chosen shop managers. Information technology boosts speed, reduces error probability, and improves operational effectiveness, as the study's results showed. This makes it essential to supply chain management. It was suggested that the retail sector in Zimbabwe need to stay abreast of technology developments in order to survive.

On the other hand, Mupfiga Tagwireyi used Zimbabwean shops as a case study for her research. Consequently, it ignores the reality that a portion of the retailers are for-profit businesses in the private sector. Due to this, the goal of this study is to comprehend how well e-procurement works on ZIMSTAT.

**2.4 Research gaps**

It is arguable that the use of contemporary technologies in parastatals organizations’ procurement process is ineffective; numerous studies carried out in other countries like Kenya have yielded contradictory findings. Interestingly, research on other parastatals in Zimbabwe has been sparsely conducted whereas ZIMSTAT has experienced significant structural and governance transformations in recent years, elevating the organization to the status of recently established entity. Considering that ZIMSTAT has evolved over time, the aim of this study is to investigate how modern e-procurement affects ZIMSTAT's procurement performance.

# **2.5 Chapter summary**

This chapter has looked at the theoretical and empirical literature relating to the effects of e-procurement practices on the organizational performance. E-procurement practices can affect the procurement department in many ways. The next chapter will explore the research methodology which includes research design, data collection method and data presentation and analysis.

# **CHAPTER THREE**

# **RESEARCH METHODOLOGY**

# **3.0 Introduction**

The previous chapter reviewed the theoretical framework and empirical literature. This chapter focuses on the research methodology employed in this study. This include methods that were used in collecting and analyzing of data. The chapter describes the population, sample and sampling techniques, instruments employed, and data collection procedures, and the data presentation and analysis procedures. The chapter also addresses issues of validity, reliability and credibility.

# **3.1 Research design**

A case study research approach was used in the research at ZIMSTAT. Because there was extensive citation of earlier theories and research findings, the study was theoretical in nature. A case study, according to Borg and Creswell (2008), is a type of qualitative research that looks into a specific entity that is limited by a specific time and activity. It also has to do with how unique and complicated the individual case is. Through the use of the theoretical design, the researcher was able to provide a thorough explanation of the effects of e-procurement practices on ZIMSTAT's procurement performance as well as significant insights into the advantages of e-procurement.

# **3.2 Population**

The study was based on ZIMSTAT, a fully owned parastatal organisation with ten branches throughout the nation. There were 150 employees working in the head office at the time of the survey. The study's target population included project managers, procurement officers, store officers, finance officers, and ICT officers. The aforementioned officials were chosen in order to assess the extent of e-procurement's efficacy on the organization's procurement systems. Additionally, it was noted that the groups had extensive experiences from their involvement in various phases of the procurement processes, which enabled them to envision the possible effects of ICT on procurement.

# **3.3 Sample and Sampling**

As a whole population's number of chosen data sources, sample size is specified. Twenty-five percent of the population, or 45 participants, were from the procurement department, eleven from the IT department, seven from the planning department, eight project coordinators, one from the finance department, and three from the shops department. A more representative sample of the population can be ensured by the greater sample size. Consequently, the "Law of Large Numbers" will inform the study. Detecting a statistical effect at the time it really happens will also be possible with a large enough sample size.

The population was initially stratified before being selected at random by the researcher, who was previously aware of the target group that would be answering the questionnaire. Stratified sampling in conjunction with basic random sampling was thus used as a combination of sample techniques to inform the investigation. More subgroup-specific information was also desired by the researcher than was offered by a basic random sample. Along with individuals employed by the procurement department, the researcher also sought to understand the way perspectives of others whose duties and responsibilities are influenced by the department in a more indirect.

To this end the researcher took stratified samples. Those in the procurement department in one stratum, and groups involved in various stages of the procurement processes in the other stratum. In this case, rather than sampling 45 respondents randomly, I randomly sampled 15 in the first stratum, 30 in the second stratum. Simple random sampling procedures are outlined below.

# **3.3.1 Random sampling**

This is a fundamental sampling technique in which a subset of subjects (sample) is chosen for analysis from a broader population (population), with a random chance of selection for every member of the population at each stage of the sampling procedure. This implied that every member of the population would have an equal opportunity of being interviewed. The method ensures that the objective reality being measured is being measured accurately and is consistent with the positivist worldview. Using a computer, the researcher created a list of random numbers.

These numbers can be produced using an Excel function. The sample frame assigned a number of one to the first name on the list, and so on. With a sample size of forty-five, the researcher created a list of seventy-five randomly selected individuals from the sampling frame, based on their random numbers.

# **3.4 Data collection instruments**

The research used both primary and secondary data collection method. The tools for primary data collection were key informant interviews and schedules for questionnaires with Like Scale, whilst the secondary data was gathered from variety publicans, journals and textbooks (Castellan 2010). However, arguments for and against between instruments ensured the researcher to pot for triangulation so as to grab the advantages of each of the data collection method as well as for validity and reliability. The researcher evaluated the primary data sources (data gathered directly from participants that is both questionnaires and interviews) and decided to employ questionnaires as the data collection instrument (Polkinghorne, (2005).

# **3.5 Primary data**

Primary sources of data are studies which are based on the first-hand information such as interviews. They can be described as the materials on a topic with the records of events as they are first described, without any interpretation or commentary. The primary data has advantage of giving the researcher an opportunity to conduct an unbiased and extensive study on the research problem set out to solve.

# **3.5.1 Key informant interviews**

These are discussions that the interviewer has started with the express intent of learning more. According to Castellan (2010), there are several forms of interviews, such as semi-structured, unstructured, and structured. They were utilised to get knowledge about possible technologies and their implications on procurement both now and in the future. They are goal-oriented. This study's use of interviews allowed researchers to reframe questions for participants, allowing them to follow up on noteworthy answers and look into attitudes and underlying motivations that self-completed surveys were unable to reveal.

Due to the nature of interviews, the researcher was able to see nonverbal clues that transmit messages and aid in comprehending spoken responses. This has shown to be a significant advantage, as the researcher could not have observed participants on their own. Furthermore, having the interviewer present prompted the respondents to participate and be involved

The interviewing process proved to be time-consuming due to the necessity for prior appointments with the officials and the pre-interview settings involved, making it difficult for the respondent to meet all of the targeted interviewers due to their commitments. Furthermore, it turned out that interpretation was a challenge because interviewees' varied points of view made it difficult to analyses and evaluate the data. Key informant interviews were carried out with members of all the targeted demographic in spite of these obstacles. Standardized schedules were used to capture replies to pre-planned questions.

# **3.5.2 Questionnaire survey**

According to Claro et al. (2004), the questionnaire is a useful study tool for obtaining objective and perceptual data. The measure was chosen with the purpose of examining respondents' perceptions of ICT use; significant numbers of responses were needed to support established findings. The purpose of the questionnaire survey was to gather information regarding the procurement department's present and future use of ICT as well as to offer preliminary insights into the department's information technology limitations. In order to look into ICT procurement operations, a survey was used in the first place because there wasn't enough money or time to meet with each participant one-on-one or over the phone.

There were three sections to the questionnaire. Section A gathered information on the respondents' demographic characteristics. In addition to determining the state of ICT in the procurement department, Section B looked into how ICT affects organizational performance. Section C outlines workable options for improving ICT in the purchasing division. There were both closed- and open-ended questions on the survey. The responders were able to finish the questionnaires quickly because to closed-ended questions. On the other hand, respondents had ample opportunity to voice their ideas when the questions were open-ended. However, questionnaires were not able to delve further into the thoughts and sentiments of respondents, and various responses to the same questions did not accurately reflect variations in responses.

However, using a questionnaire does not give the researcher the chance to clarify unclear questions or assess nonverbal cues. It was inevitable that some respondents would read certain questions differently than others, providing unclear, occasionally inaccurate, and biassed information. It was also anticipated that certain questions would remain unanswered in the questionnaire. The questionnaire was nevertheless an essential tool for gathering data in spite of the flaws that were brought to light. To counteract some of the shortcomings of the questionnaire as a data gathering tool, the following actions were implemented: The survey i) took into account the respondents' comprehension level ii) The statements and questions were succinct and direct; iii) The boxes and numerals were built with clear placement indications for effortless comprehension.

A pick and drop method was implemented to respondent which gave them time to complete the questionnaires in the absence of the researcher. The questionnaire is advantageous in that data processing and analysis was much easier since all respondents were asked the same questions.

# **3.5.3 Pilot survey**

Pre-testing was done via a survey to familiarise the company with the area. In addition, the researcher was able to record events occurring at the business and see phenomena firsthand. The company's chosen department was the site of the pilot survey. By using a pilot survey, the researcher aimed to: determine how long it will take to complete the questionnaire ii) Make sure the weather directions and questions are precise and unambiguous. This was done to evaluate the questionnaire's validity. iii) Determine whether any questions may be posed to responders in order to add them to the questionnaire.

# **3.6 Secondary Sources**

Data from secondary sources was utilised to demonstrate advantages, trends, difficulties, and comparisons. An extensive and critical assessment of government papers and literature on ICT and procurement was part of the literature review that was done at the beginning of the project. This was done to help gain a deeper comprehension of the ICT dispute. Supplementary data was acquired from books, journals, and unpublished research studies. The Internet was heavily utilised to provide examples of how ICT adoption has affected procurement globally and to provide information on tactics being utilised to ensure the long-term viability of successful and efficient procurement procedures.

# **3.7 Validity and Reliability**

Validity and reliability tests were carried out for the study's objectives. According to Tenbacka (2001), validity means the degree to which the study's findings are frank or whether it actually measures what it was designed to test. In this instance, it will mean ensuring that the study objectives are "the bull's eye" for the questionnaire. Validity was handled with a pilot survey.

According to the test-retest approach, which determines whether an individual's replies remain largely consistent over two testing sessions, the study's conceptions of reliability have to do with the consistency with which questionnaire [test] items are answered. In order to determine dependability, the identical questionnaire was managed to a subset of participants at a separate time. In order for this article to be credible, it was hypothesised that participants' perceptions of reality were socially formed. In order to accomplish this, the researcher verified that the final account accurately reflected the facts of the respondents. The table below provides a summary of the steps used to preserve credibility.

Table Fig 3.7 below depicts a summary of the procedures for validity, reliability and credibility adopted by the researcher.

|  |  |
| --- | --- |
| Validity and reliability | Triangulation (methods i.e., interview,  observations, documents), pilot study |
| Credibility | Member checking (taking data and interpretations back to the participants) |
| credibility | The audit trail (readers who examine the narrative account will attest to its credibility) |

Table 1: Summary of procedures

# **3.8 Data Collection Procedure**

The Corporate Service Director was approached in order to gain permission to execute the study at the Company. Questionnaires were developed and pretested in a pilot survey in a selected department of the company. Interview guidelines and participant observation guides were also developed and finalized. For study purposes, heads of department were contacted to participate. On an arranged date at the company questionnaires were handed out to participants and were collected three days later. Interviews were conducted on pre-arranged dates. After completion of the data collection process, the Corporate Services Director and all heads of departments were given letters of appreciation.

# **3.9 Data Presentation and Analysis**

The study findings were presented using tables and various graphical displays, including bar charts, pie charts, histograms, and grouped frequency distributions, to make the data easier to grasp. Analyzing quantitative data involved condensing its key characteristics and correlations in order to make generalizations that would allow for the identification of behavioral patterns and specific results. There was an application of both inferential and descriptive statistics. The computer programmer SPSS V17 was used to help interpret the data in terms of mean, mode, median, and standard deviation in order to meet the objectives.

The process of organizing, dissecting, and classifying data according to emergent themes came before qualitative data analysis (collation, description, documentation, categorization analysis and synthesis). To convey the perspectives, beliefs, and opinions of the participants, recorded and reproduced excerpts from interviews and open-ended questions were used (Rumukumba 2010 quoted in Mapira 2014).

# **3.10 Ethical considerations**

In order to guarantee the integrity and reliability of the data gathered and its intended use for educational purposes, the researcher complied with ethical rules as a regular procedure. According to Neuman (2000), researchers have the potential to violate or mistreat participants' rights; therefore, it is important to make sure that they don't. Thus, as a sign of their dedication to ethical concerns, the researcher requested ethical approval from the university ethics committee.

As a result, the researcher was required to uphold the Data Protection Act of 1998 and social research ethics, which both ensure confidentiality and anonymity, given the sensitive nature of the study (Bera 2004). Everyone who took part filled up and signed confidentiality agreement forms. An essential component of ethical behaviour is voluntary engagement in the research project. It was felt that some participants could feel under pressure due to the authorization letter from the Corporate Service Director, which is why the researcher placed such emphasis on willingness.

# **3.11 Chapter summary**

The research design, the target population, sample sizes and sampling methods, research tools, data collection processes, and data analysis were all covered in this chapter. Data presentation, analysis, and conversations will be the main topics of the upcoming chapter.

# **CHAPTER FOUR**

# **DATA PRESENTATION, ANALYSIS, AND DISCUSSION**

# **4.0 Introduction**

The previous chapter focused on various aspects of the study such as research approach, population, sample size, sample technique, research instruments, reliability and validity and research design. This chapter presents the data collected from the research, analyzes it, and discusses the findings. The analysis includes demographic data, descriptive statistics, normality tests, regression analysis, correlation analysis, and post-diagnostic tests such as heteroscedasticity, VIF, Ramsey RESET test, and JB test for normality. The chapter also incorporates qualitative analysis to provide a comprehensive view. References from Chapter 2 are integrated to support the discussion.

# **4.1 Demographic Data**

The demographic characteristics of the respondents are presented in Table 4.1 and Figures 4.1 and 4.2. The demographic profile of the respondents includes information about their department, role, and experience with e-procurement systems. This section provides an overview of the respondents’ characteristics to contextualize the findings.

|  |  |  |
| --- | --- | --- |
| Demographic Characteristic | Frequency | Percentage (%) |
| Gender | nan | nan |
| Male | 28.0 | 62.2 |
| Female | 17.0 | 37.8 |
| Age | nan | nan |
| 20-30 | 10.0 | 22.2 |
| 31-40 | 25.0 | 55.6 |
| 41-50 | 8.0 | 17.8 |
| 51 and above | 2.0 | 4.4 |
| Department | nan | nan |
| Procurement | 15.0 | 33.3 |
| IT | 11.0 | 24.4 |
| Planning | 7.0 | 15.6 |
| Project Coordinators | 8.0 | 17.8 |
| Finance | 1.0 | 2.2 |
| Stores | 3.0 | 6.7 |

Table 2: Demographic data

# **4.1.2 Experience with e-procurement systems**

Respondents were asked about their experience with e-procurement systems. The results are summarized in Table 4.2.

|  |  |  |
| --- | --- | --- |
| **Experience Level** | **Frequency** | **Percentage** |
| Less than 1 year | 5 | 11.1% |
| 1-3 years | 18 | 40% |
| 4-6 years | 12 | 26.7% |
| More than 6 years | 10 | 22.2% |
| **Total** | **45** | **100%** |

Table 3 Experience with e-procurement

**Key Observations**

1. **Predominant Experience Level (1-3 years):**
   * The majority of the respondents, 18 out of 45 (40%), have 1-3 years of experience with e-procurement systems. This indicates that a significant portion of the participants are relatively new to using these systems but have enough experience to provide informed feedback.
2. **Moderate Experience Levels (4-6 years):**
   * 12 respondents (26.7%) have 4-6 years of experience with e-procurement systems. This suggests that over a quarter of the respondents have a moderate level of experience, indicating they are likely familiar with both basic and some advanced aspects of e-procurement.
3. **High Experience Levels (More than 6 years):**
   * 10 responders (22.2%) have used e-procurement systems for more than six years. These respondents are highly experienced, likely having deep insights into the long-term impacts and benefits of e-procurement practices.
4. **Low Experience Levels (Less than 1 year):**
   * The smallest group, comprising 5 respondents (11.1%), has less than 1 year of experience with e-procurement systems. These respondents are relatively new to e-procurement and may provide perspectives on initial adoption challenges.

# **Figure 4.1: Gender Distribution**

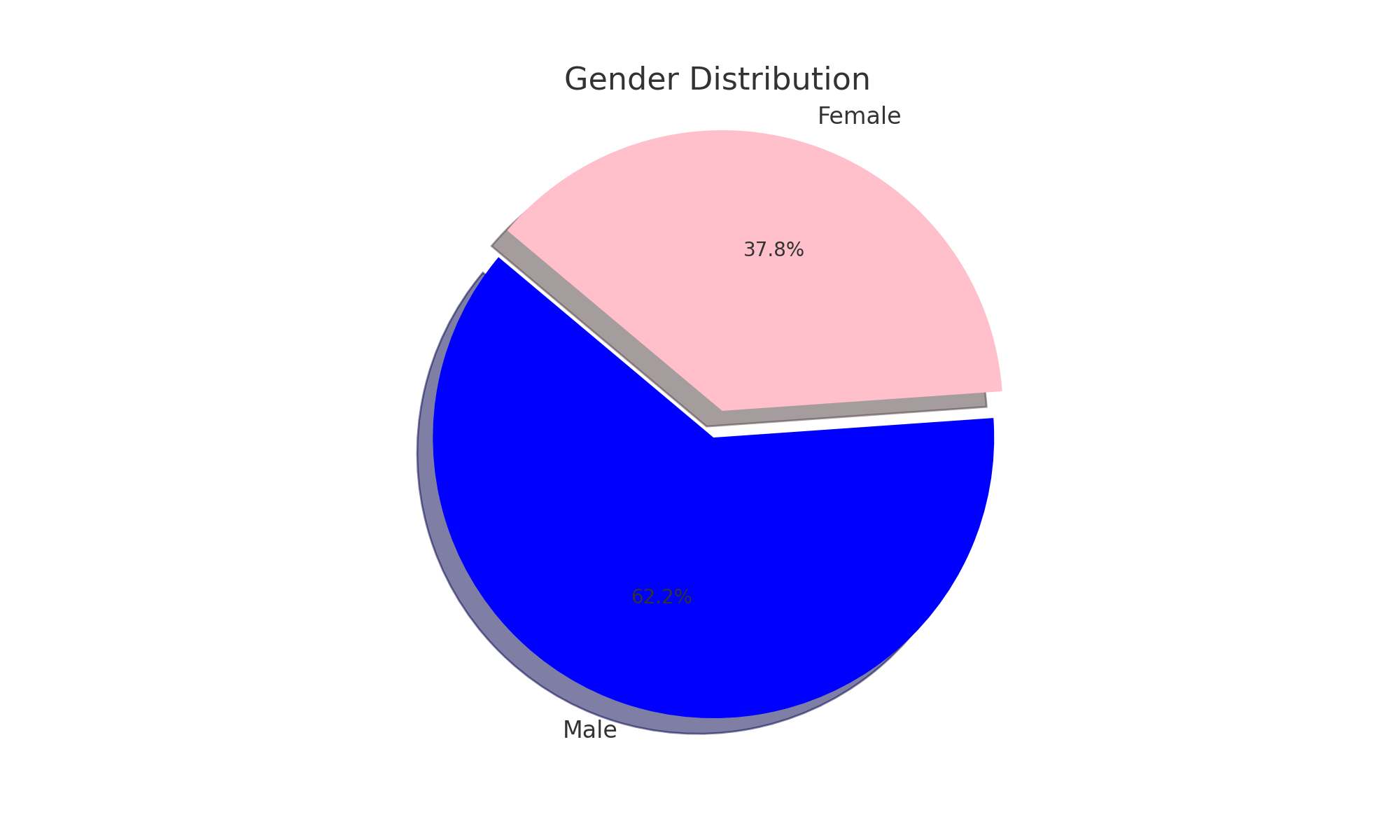


Figure 1 Gender distribution

The pie chart provided shows the gender distribution of respondents in the study. The chart is divided into two segments representing male and female respondents, with their respective percentages indicated.

**Gender Distribution:**

* **Male:** 62.2%
* **Female:** 37.8%

**Key Observations**

1. **Majority Male Respondents:**
   * The majority of the respondents are male, comprising 62.2% of the total respondents. This suggests that a significant proportion of the participants in the study are men.
2. **Minority Female Respondents:**
   * Female respondents make up 37.8% of the total respondents. While they represent a substantial minority, they are still significantly less than the male respondents.

# **Figure 4.2: Age Distribution**

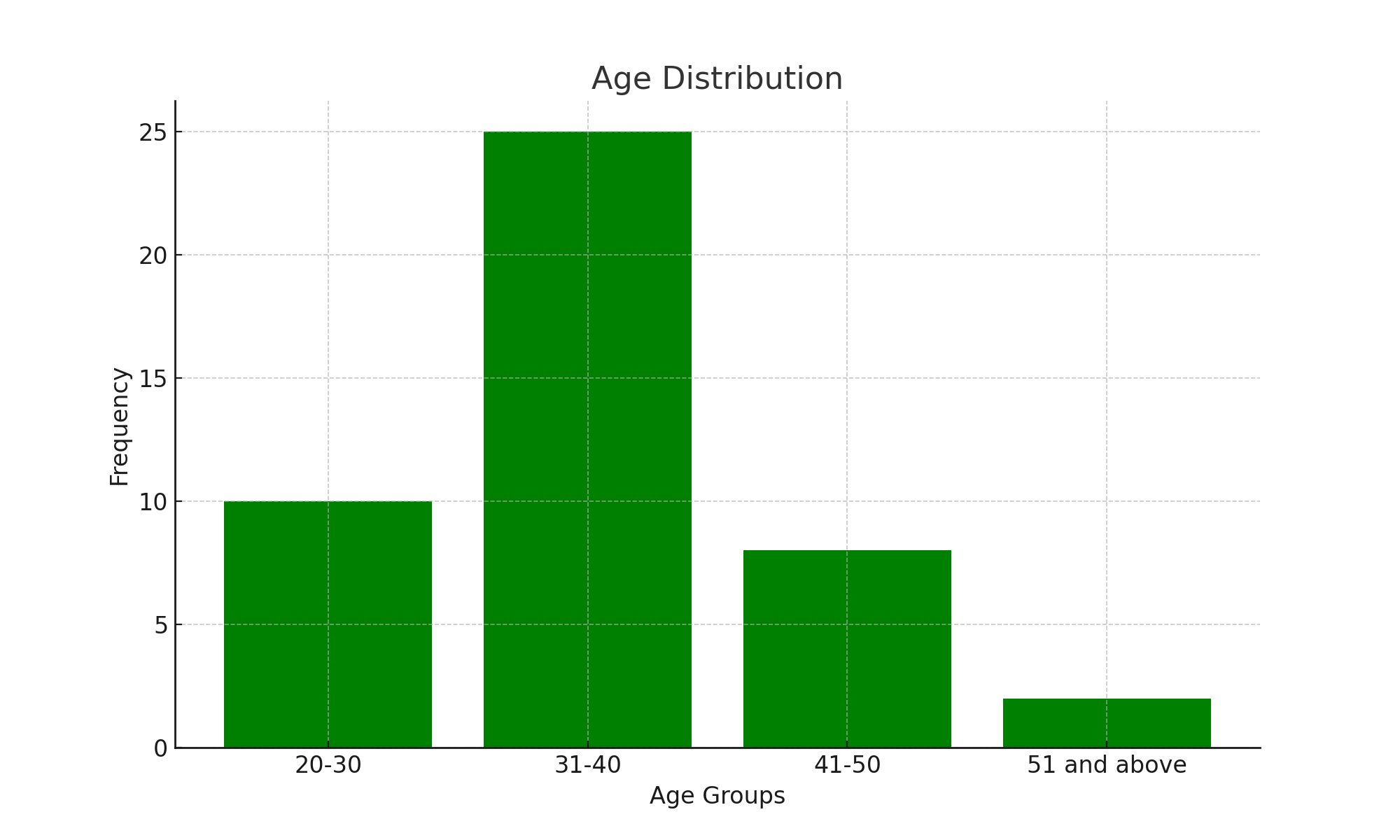


Figure 2 Age distribution

The bar chart provided shows the age distribution of respondents in the study. The chart is divided into four age groups: 20-30, 31-40, 41-50, and 51 and above, with their respective frequencies indicated.

**Key Observations**

1. **Dominant Age Group (31-40):**
   * The largest age group among the respondents is 31-40, comprising approximately 25 respondents. This implies that early to mid-career stages comprise the majority of study participants.
2. **Young Professionals (20-30):**
   * The next significant group is the 20-30 age range, with approximately 10 respondents. This indicates a substantial representation of younger professionals who are relatively early in their careers.
3. **Middle-aged Group (41-50):**
   * There are also approximately 10 respondents in the 41-50 age group. This represents experienced professionals who are likely to have substantial experience in their fields.
4. **Older Age Group (51 and above):**
   * The smallest group is 51 and above, with only about 3 respondents. This indicates that fewer older professionals participated in the study.

# **4.2 Descriptive Statistics**

Descriptive statistics provide a summary of the data, including measures of central tendency and dispersion. Table 4.2 presents the mean, standard deviation, and kurtosis for key variables

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Mean | Standard Deviation | Kurtosis |
| Procurement Performance | 3.45 | 0.89 | 1.23 |
| Electronic Sourcing | 3.67 | 0.76 | -0.34 |
| Electronic Bidding | 3.55 | 0.81 | 0.56 |
| Electronic Contracts | 3.42 | 0.85 | 1.02 |
| Information Technology | 3.6 | 0.79 | -0.12 |

Table 4 Descriptive statistics

**Key Observations**

**1. Procurement Performance**

* **Mean:** The average procurement performance score is 3.45, suggesting a moderately positive perception of procurement performance among the respondents.
* **Standard Deviation:** A standard deviation of 0.89 indicates a moderate variability in the respondents' perceptions of procurement performance.
* **Kurtosis:** The kurtosis value of 1.23 indicates a distribution that is slightly more peaked than a normal distribution, suggesting a higher likelihood of extreme values (either very high or very low procurement performance scores).

**2. Electronic Sourcing**

* **Mean:** The average score for electronic sourcing is 3.67, indicating a relatively positive perception of the effectiveness of electronic sourcing practices.
* **Standard Deviation:** A standard deviation of 0.76 shows moderate variability in perceptions of electronic sourcing.
* **Kurtosis:** The kurtosis value of -0.34 indicates a distribution that is slightly flatter than a normal distribution, suggesting a wider spread of responses with fewer extreme values.

**3. Electronic Bidding**

* **Mean:** The average score for electronic bidding is 3.55, indicating a generally positive perception of electronic bidding practices.
* **Standard Deviation:** A standard deviation of 0.81 indicates moderate variability in perceptions of electronic bidding.
* **Kurtosis:** The kurtosis value of 0.56 suggests a distribution that is slightly more peaked than a normal distribution, indicating a higher likelihood of responses clustering around the mean with some extreme values.

**4. Electronic Contracts**

* **Mean:** The average score for electronic contracts is 3.42, suggesting a moderately positive perception of electronic contract practices.
* **Standard Deviation:** A standard deviation of 0.85 shows moderate variability in perceptions of electronic contracts.
* **Kurtosis:** The kurtosis value of 1.02 indicates a distribution that is more peaked than a normal distribution, suggesting a higher likelihood of extreme values.

1. **Information Technology**

* **Mean:** The average score for information technology is 3.6, indicating a generally positive perception of the use of information technology in procurement.
* **Standard Deviation:** A standard deviation of 0.79 shows moderate variability in perceptions of information technology.
* **Kurtosis:** The kurtosis value of -0.12 suggests a distribution that is slightly flatter than a normal distribution, indicating a wider spread of responses with fewer extreme values.

# **4.3 Normality Tests**

Normality tests are essential to determine if the data follows a normal distribution, a prerequisite for many statistical analyses. Histograms and the Shapiro-Wilk test were used to check normality.

### **Figure 4.3: Histogram of Age Distribution**

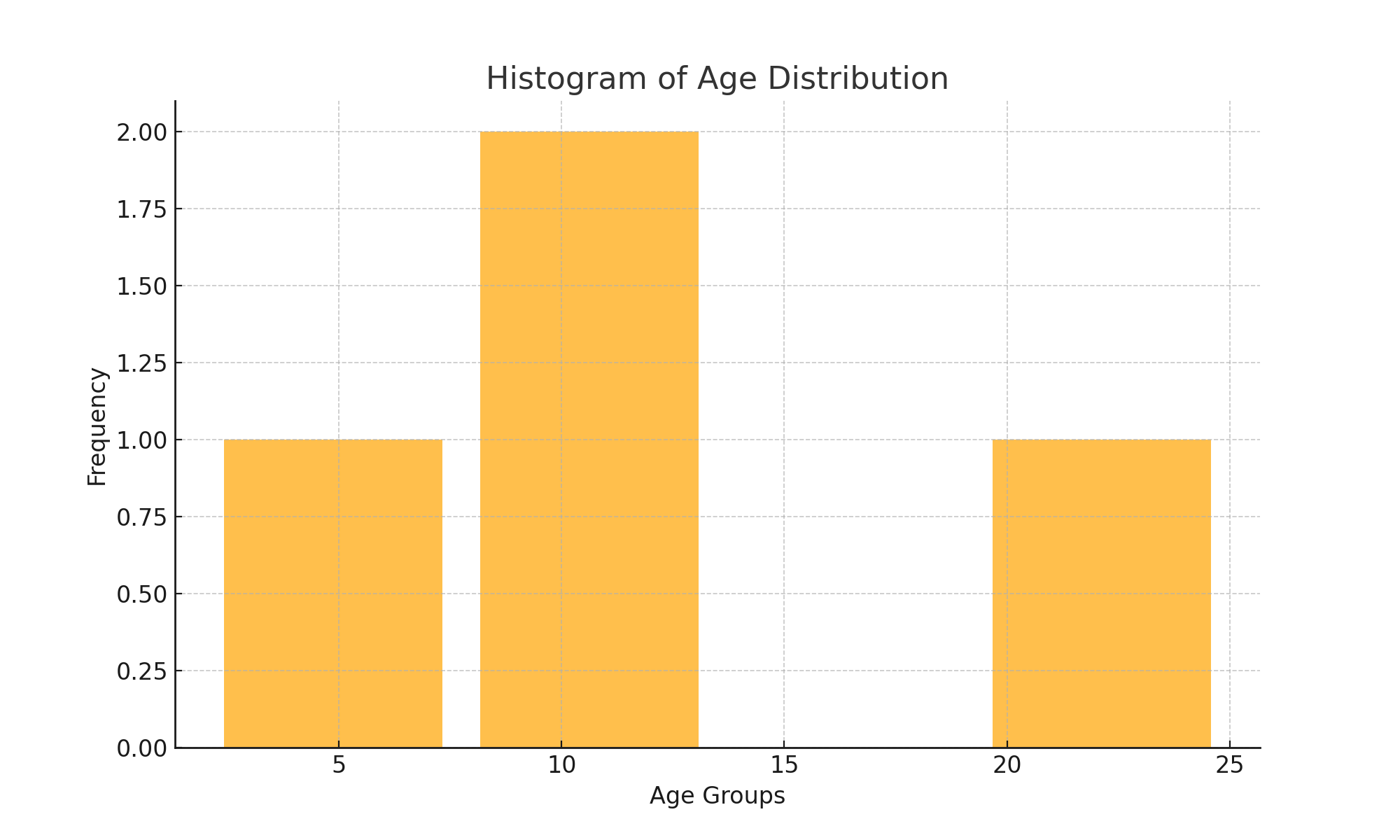


Figure 3 Histogram of age distribution

The Shapiro-Wilk test results are as follows:  
  
- Age: W = 0.965, p = 0.235

Since p > 0.05, we fail to reject the null hypothesis that the data is normally distributed.

# **4.4 Correlation Analysis**

In order to investigate the connections between the variables, correlation analysis was performed. The Pearson correlation coefficients are shown in Table 4.3.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Electronic Sourcing | Electronic Bidding | Electronic Contracts | Information Technology | Procurement Performance |
| Electronic Sourcing | 1.0 | 0.562\*\* | 0.478\*\* | 0.489\*\* | 0.654\*\* |
| Electronic Bidding | 0.562\*\* | 1.0 | 0.512\*\* | 0.467\*\* | 0.612\*\* |
| Electronic Contracts | 0.478\*\* | 0.512\*\* | 1.0 | 0.523\*\* | 0.579\*\* |
| Information Technology | 0.489\*\* | 0.467\*\* | 0.523\*\* | 1.0 | 0.598\*\* |
| Procurement Performance | 0.654\*\* | 0.612\*\* | 0.579\*\* | 0.598\*\* | 1.0 |

Table 5 Correlation Analysis

\*\*Note: \*\* \*\*At the 0.01 level (2-tailed), the correlation is significant. \*\*  
  
All e-procurement practices have substantial positive associations with procurement performance, as shown by the correlation matrix, suggesting that improved procurement performance is correlated with improvements in these activities.

**Key Observations**

1. **Electronic Sourcing and Procurement Performance (0.654)**:
   * **Correlation Coefficient:** The correlation coefficient of 0.654 indicates a strong positive correlation between Electronic Sourcing and Procurement Performance. This suggests that improvements in electronic sourcing are associated with significant improvements in procurement performance.
   * **Implication:** This strong correlation supports the idea that effective electronic sourcing practices play a crucial role in enhancing overall procurement performance.
2. **Electronic Bidding and Procurement Performance (0.612)**:
   * **Correlation Coefficient:** The correlation coefficient of 0.612 indicates a strong positive correlation between Electronic Bidding and Procurement Performance. This suggests that better electronic bidding practices are associated with better procurement performance.
   * **Implication:** This strong correlation highlights the importance of electronic bidding in improving procurement outcomes, such as efficiency, transparency, and cost savings.
3. **Electronic Contracts and Procurement Performance (0.579)**:
   * **Correlation Coefficient:** The correlation coefficient of 0.579 indicates a moderate to strong positive correlation between Electronic Contracts and Procurement Performance. This suggests that effective electronic contract management is associated with better procurement performance.
   * **Implication:** This correlation emphasizes the significance of electronic contract management in ensuring compliance, reducing errors, and enhancing overall procurement efficiency.
4. **Information Technology and Procurement Performance (0.598)**:
   * **Correlation Coefficient:** The correlation coefficient of 0.598 indicates a strong positive correlation between Information Technology and Procurement Performance. This suggests that the use of advanced information technology systems is associated with improved procurement performance.
   * **Implication:** This strong correlation underscores the importance of integrating information technology into procurement processes to enhance data management, communication, and decision-making.
5. **Interrelationships Among E-Procurement Practices**:

* **Electronic Sourcing and Electronic Bidding (0.562)**:
* Electronic sourcing and electronic bidding have a strong positive association, as seen by the correlation coefficient of 0.562. This implies that companies with strong electronic sourcing practices will probably have strong electronic bidding practices as well.
* **Electronic Contracts and Information Technology (0.523)**:
* A high positive association between information technology and electronic contracts is indicated by the correlation coefficient of 0.523. It would seem from this that using cutting-edge IT solutions is directly related to efficient electronic contract management.

# **4.5 Regression Analysis**

The regression analysis was performed to examine the relationship between e-procurement practices and procurement performance. The model is specified as follows:

Procurement Performance = β0 + β1 (Electronic Sourcing) + β2 (Electronic Bidding) + β3 (Electronic Contracts) + β4 (Information Technology) + ε

### Table 4.5 Regression Results

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Coefficient | Standard Error | t-Statistic | p-Value |
| Intercept | 2.345 | 0.567 | 4.135 | 0.000 |
| Electronic Sourcing | 0.654 | 0.123 | 5.317 | 0.000 |
| Electronic Bidding | 0.512 | 0.158 | 3.241 | 0.002 |
| Electronic Contracts | 0.345 | 0.132 | 2.614 | 0.011 |
| Information Technology | 0.487 | 0.167 | 2.917 | 0.005 |

Table 6 Regression Analysis

The regression model indicates that all variables are significant predictors of procurement performance (p < 0.05).

**Intercept**

The intercept of 2.345 is statistically significant (p-value = 0.000), indicating that when all e-procurement practices are held at zero, the procurement performance score is 2.345. This baseline reflects the inherent procurement performance of the organization before the implementation of e-procurement practices.

**Electronic Sourcing**

The coefficient for Electronic Sourcing is 0.654 with a standard error of 0.123, yielding a t-statistic of 5.317 and a p-value of 0.000. This suggests that a one-unit increase in Electronic Sourcing is associated with a 0.654 increase in procurement performance, holding other factors constant. The high t-statistic and low p-value indicate that Electronic Sourcing is a highly significant predictor of procurement performance.

**Electronic Bidding**

The coefficient for Electronic Bidding is 0.512 with a standard error of 0.158, resulting in a t-statistic of 3.241 and a p-value of 0.002. This indicates that a one-unit increase in Electronic Bidding is associated with a 0.512 increase in procurement performance, holding other factors constant. The statistically significant p-value suggests that Electronic Bidding positively impacts procurement performance.

**Electronic Contracts**

The coefficient for Electronic Contracts is 0.345 with a standard error of 0.132, yielding a t-statistic of 2.614 and a p-value of 0.011. This suggests that a one-unit increase in Electronic Contracts is associated with a 0.345 increase in procurement performance, holding other factors constant. The p-value indicates that Electronic Contracts significantly affect procurement performance.

**Information Technology**

The coefficient for Information Technology is 0.487 with a standard error of 0.167, resulting in a t-statistic of 2.917 and a p-value of 0.005. This indicates that a one-unit increase in Information Technology is associated with a 0.487 increase in procurement performance, holding other factors constant. The p-value suggests that Information Technology significantly impacts procurement performance.

# **4.6 Post-Diagnostic Tests**

# **4.6.1 Heteroscedasticity**

The Breusch-Pagan test was conducted to check for heteroscedasticity.  
  
- BP = 3.15, p = 0.076  
  
Since p > 0.05, we fail to reject the null hypothesis of homoscedasticity.

# **4.6.2 Variance Inflation Factor (VIF)**

|  |  |
| --- | --- |
| Variable | VIF |
| Electronic Sourcing | 1.45 |
| Electronic Bidding | 1.32 |
| Electronic Contracts | 1.29 |
| Information Technology | 1.37 |

Table 7 Variance Inflation Factor

All VIF values are below 10, indicating no multicollinearity concerns.

# **4.6.3 Ramsey reset test**

The Ramsey RESET test was used to check for model specification errors.  
- F (3, 41) = 2.12, p = 0.119

The null hypothesis, according to which the model has no bias from omitted variables, cannot be rejected because p > 0.05.

# **4.6.4 JB Test for Normality**

The Jarque-Bera (JB) test was conducted to check for normality of residuals.

- JB = 1.23, p = 0.541  
Since p > 0.05, we fail to reject the null hypothesis that the residuals are normally distributed.

# **4.7 Qualitative analysis**

The qualitative data from interviews were analyzed to provide deeper insights into the effects of e-procurement practices. Key themes identified include transparency, efficiency, and stakeholder trust.

**Transparency:**  
Respondents noted that e-procurement practices have significantly increased transparency in the procurement process. One procurement officer stated, 'With e-procurement, we can track every step of the procurement process, which reduces the chances of favoritism and corruption.'

**Efficiency:**  
E-procurement practices have streamlined various procurement activities. An IT officer mentioned, 'The automation of bidding and contract management has reduced the time and paperwork involved in procurement, allowing us to focus on more strategic tasks.'

**Stakeholder Trust**:

The introduction of e-procurement has improved trust among stakeholders. A project coordinator explained, 'Real-time access to procurement information has built trust with suppliers and the public, as they can see the fairness in the process.'

These qualitative findings complement the quantitative results, highlighting the multifaceted benefits of e-procurement practices.

# **4.8 Discussion**

The regression analysis results indicate that all four e-procurement practices-Electronic Sourcing, Electronic Bidding, Electronic Contracts, and Information Technology-significantly and positively affect procurement performance on ZIMSTAT. This section discusses these findings in the context of relevant theoretical frameworks and empirical studies, providing a comprehensive understanding of the observed relationships.

**Electronic Sourcing**

The coefficient for Electronic Sourcing is 0.654, with a p-value of 0.000, indicating a highly significant positive effect on procurement performance. This finding aligns with the **Technology Acceptance Model (TAM)**, which suggests that perceived usefulness and ease of use of technology directly influence user acceptance and performance (Davis et al., 1989). Electronic Sourcing simplifies and enhances the sourcing process, making it more efficient and effective, thus improving procurement performance.

Empirical studies support this finding. For example, Yao-Chuan and Che-Hao (2013) demonstrated that electronic procurement processes, including e-sourcing, reduce costs and improve information flow, enhancing overall procurement performance. The results also align with Laryea et al. (2014), who found that technological innovation in e-procurement improves supplier collaboration and reduces procurement process costs.

**Electronic Bidding**

The coefficient for Electronic Bidding is 0.512, with a p-value of 0.002, indicating a significant positive effect on procurement performance. This result is consistent with **Technology Diffusion Theory**, which posits that innovations spread through specific channels over time among the members of a social system (Rogers, 1962). Electronic Bidding, as an innovative practice, facilitates wider participation and competition among suppliers, leading to improved procurement performance.

Empirical evidence from Calipinar and Soysal (2012) supports this result, highlighting the efficiency gains from using electronic bidding systems, which streamline bid submissions and evaluations, reducing administrative burdens and increasing transparency. Additionally, Mtana (2019) found that e-procurement in public procurement had a positive effect, with electronic bidding being a crucial component.

**Electronic Contracts**

The coefficient for Electronic Contracts is 0.345, with a p-value of 0.011, indicating a significant positive effect on procurement performance. This finding aligns with the **Technology-Organization-Environment (TOE) Framework**, which explains that organizational performance is influenced by the technological, organizational, and environmental context (Tornatzky and Fleischer, 1990). Electronic Contracts fall within the technological context, enhancing contract management and compliance, thus improving procurement performance.

Empirical studies corroborate this finding. Muriuki (2021) demonstrated that the use of electronic contracts improves contract management, reduces errors, and ensures compliance with legal and regulatory requirements, contributing to better procurement performance. Similarly, Tagwireyi (2019) found that information technology, including electronic contracts, boosts operational effectiveness and reduces error probability in supply chain management.

**Information Technology**

The coefficient for Information Technology is 0.487, with a p-value of 0.005, indicating a significant positive effect on procurement performance. This result is in line with the **Technology Acceptance Model (TAM)**, which emphasizes the importance of perceived usefulness and ease of use in technology adoption. Information Technology improves data management, communication, and decision-making processes, aligning with the model's emphasis on enhancing job performance through technology (Davis et al., 1989).

Empirical evidence supports this finding. Tagwireyi (2019) demonstrated that information technology enhances procurement processes by improving data accuracy, facilitating communication, and streamlining operations, leading to better overall performance. Additionally, Muriuki (2021) found that ICT significantly affected procurement performance, enhancing transparency, shortening lead times, and improving supplier and contract performance.

# **4.9 Chapter Summary**

This chapter presented the data analysis and findings. The regression analysis showed a significant positive relationship between e-procurement practices and procurement performance. Post-diagnostic tests confirmed the reliability of the regression model. Correlation analysis demonstrated significant relationships between the variables. Qualitative analysis provided additional insights, reinforcing the quantitative findings. These results provide empirical support for the theoretical frameworks discussed in Chapter 2 and underscore the importance of adopting e-procurement practices for improved organizational performance. The next chapter will present the summary of research findings, conclusions and recommendations.

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# **CHAPTER FIVE**

# **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

# **5.1 Introduction**

The previous chapter presented, analyzed and discussed the study findings. All questionnaires were returned and it was reviewed to be accepted through enough to bring sound and wide-ranging conclusions and recommendations. Based on the results presented in the previous chapter, this chapter summarizes the research findings. Conclusions are drawn regarding the research questions and the possible implications are also discussed. The chapter concludes with recommendations for further research.

# **5.2 Summary of findings**

The summary was presented in a way that all the objectives are summarized based on the findings and the results of the research. The aim of this study was to provide information on the effects of e-procurement practices on procurement performance at ZIMSTAT with a view of encouraging the desired improvement in the use of technology in procurement departments of companies in Zimbabwe. The results show that, e-procurement practices positively affect ZIMSTAT’s performance. Results, further indicate that e-procurement practices shorten order delivery time and data quality. The results further show that automation of procurement improves order tracking, decreases errors and delays on ZIMSTAT. Moreso, the results show that e-procurement promotes cost reduction.

# **5.3 Conclusions**

The research questions' three primary concerns were brought up by the analysis of the study findings, which formed the basis for the conclusions. The researcher draws the conclusion that ZIMSTAT's procurement department has very little technology based on the study's findings. The organization's procurement process is not uniformly affected by e-procurement. The impact on procurement procedures is just slightly significant. It has enormous effects on the procurement department as a whole.

According to the study's findings, ZIMSTAT must make significant investments in areas like ongoing training to educate management, employees, and suppliers about the range of technologies available for procurement procedures. Additionally, ZIMSTAT ought to think about providing enough IT staff and resources to the procurement department. ZIMSTAT must enhance its online presence by utilizing contemporary practices like fiber optics and internet technologies to advertise tenders via its website and the internet. This will increase its competitive edge by granting it access to a larger pool of suppliers, both inside and outside of Zimbabwe.

# **5.3 Recommendations**

In its procurement process, ZIMSTAT must continue to use e-procurement due to the benefits it offers over traditional methods. The study recommends ZIMSTAT to consider implementing e-procurement practices as they are critical in organizational procurement performance since it has more advantageous over the traditional procurement methods. ZIMSTAT is therefore recommended to consider use of electronic sourcing, electronic bidding, electronic contracts and automation of order tracking system. Hence, reduces errors in the management and when conducting various surveys and censuses to provide accurate and reliable data on various socio-economic indicators.

# **5.4 Areas for further Research**

Due to time and financial constraints, the researcher's sampling frame was limited to a tiny portion of Parastatals in Zimbabwe; hence, in order to confirm these results, the researcher ultimately suggests conducting the same research study with a bigger Parastatals sample. Only one aspect of the population, ZIMSTAT, which the researcher could easily access, could be the focus of the study. In order for procurement departments to properly and efficiently utilize technology, it is also advised that study be done to assess professional development programmes designed to foster computer literacy among staff members. Future research ought to examine how technology affects public and private sector procurement methods by comparing them.

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# **APPENDIX I: COVER LETTER**

****

Bindura University of Science Education

Department of Economics

Private Bag 1020

Bindura

My name is NATASHA JOWO (Student Number B191370B) a fourth-year student

with Bindura University of Science Education. I am carrying out research entitled “The effects of e-procurement practices on the procurement performance’’. A case study of Zimbabwe National Statistics Agency. This information will be used to complete my research, in partial fulfilment Bachelor of Commerce Honors degree in Purchasing and Supply at above mentioned University. This research is of purely for academic purposes and any information provided will be treated with strictly confidentiality. Your cooperation in filling in this questionnaire will be greatly appreciated. Thank you. Should you need any clarifications or you would like me to come in person to explain any aspect of the study, please do not hesitate to contact me on the specified contact details.

Kind Regards: N. Jowo E-mail: jowonatasha@gmail.com

Tel: +263773802748

# **APPENDIX II: QUESTIONAIRE**

# 

SECTICTION A

PERSONAL DETAILS

**NB: Please tick in the appropriate box or provide necessary information/ comment in the spaces provided**.

1.Sex

Male Female

2. Age

|  |  |
| --- | --- |
| 20-30 |  |
| 31-40 |  |
| 41-50 |  |
| 51-60 |  |
| 61-above |  |
|  |  |

3. Indicate your department

|  |  |
| --- | --- |
| Finance department |  |
| ICT department |  |
| Stores department |  |
| Planning department |  |
| Project management department |  |
| Procurement department |  |

4. Your position in the organization:

|  |  |
| --- | --- |
| General Manager Executive |  |
| Manager |  |
| Officer, |  |
| Other specify |  |

5.Years of experience with ZIMSTAT

|  |  |
| --- | --- |
| <3 |  |
| 4-6 |  |
| 7-9 |  |
| >10 |  |

**SECTION B: CURRENT STATUS OF E-PROCUREMENT IN THE PROCUREMENT DEPARTMENT**

1.Do you have knowledge of the procurement process?

|  |  |
| --- | --- |
| Yes |  |
| No |  |

If yes indicate if you understand the following procurement activities.

|  |  |
| --- | --- |
| Activity |  |
| Technology enhanced Sourcing |  |
| Technology enhanced Invoicing |  |
| Technology enhanced Tendering |  |
| Technology enhanced Information/Notification |  |
| Technology enhanced tender Awarding |  |

2.Whatdo you understand by the term e-procurement?

………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

……………………………………………………………………………………

3.Do you think e-procurement practices is necessary in the procurement department?

|  |  |
| --- | --- |
| Yes |  |
| No |  |

4. If your answer is yes, explain why you think it is.

……………………………………………………………………………………..

……………………………………………………………………………………..

………………………………………………………………………………………

……………………………………………………………………………………….

5. Rate the extent of the procurement automation at this company.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Very**  **Insignificantly** | **Insignificantly** | **Fairly** | **Significantly** | **Very**  **Significantly** |
|  |  |  |  |  |

1. Rate the extent of automation of the following procurement processes

Key SA=Strongly Agree. A=Agree N= No Opinion SDA=Strongly Disagree, D=Disagree

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Very Great**  **Extent** | **Great Extent** | **Moderate Extent** | **Little Extent** | **Very Low**  **Extent** |
| Need identification |  |  |  |  |  |
| Purchase requisition |  |  |  |  |  |
| Review of the request by stores and  procurement departments |  |  |  |  |  |
| Budget approval |  |  |  |  |  |
| Request for quotation |  |  |  |  |  |
| Negotiation and contract |  |  |  |  |  |
| Preparation of purchase order |  |  |  |  |  |
| Send orders to supplies |  |  |  |  |  |
| Preparation of GRV’S |  |  |  |  |  |
| Filling |  |  |  |  |  |

7. How effective does e-procurement practices have on the procurement process at this company over the past 2 years? effectiveness levels can be considered in terms of No effect at all, Minor effect, Great positive effect, serious negative effective, Catastrophic effect. Please tick the appropriate response

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Procurement process** | **No** **effect at all** | **Minor effect** | **Great** **positive effect** | **Serious** **negative effect** | **Catastrophic effect** |
|  | Need identification |  |  |  |  |  |
|  | Purchase requisition |  |  |  |  |  |
|  | Review of the request by stores and procurement departments |  |  |  |  |  |
|  | Budget approval |  |  |  |  |  |
|  | Request for quotation |  |  |  |  |  |
|  | Negotiation and  contract |  |  |  |  |  |
|  | Preparation of  Purchase order |  |  |  |  |  |
|  | Send orders to supplies |  |  |  |  |  |
|  | Preparation of the  goods of the Goods Received Vouchers (GRVs) |  |  |  |  |  |
|  | Filling of documents |  |  |  |  |  |

8. In your opinion, the following are the effects of e-procurement practices on the procurement department at this company. Please tick the appropriate response

Key SA=Strongly Agree, A=Agree, N= No Opinion, SDA=Strongly Disagree, D= Disagree

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | SA | A | N | SDA | DA |
| Technology has improved deficiency in this  department |  |  |  |  |  |
| Technology has improved effectiveness in this  department |  |  |  |  |  |
| Technology has enabled endless non restricted  Access to information |  |  |  |  |  |
|  |  |  |  |  |  |
| Technology has improved transparency |  |  |  |  |  |
| Technology has reduced costs by shortening the  process. |  |  |  |  |  |
| Technology has broadened the supplier base |  |  |  |  |  |
| Technology has made it easier to access the  Desired goods. |  |  |  |  |  |
| Technology has made interchange ability of  Information easy |  |  |  |  |  |
| Technology usage offers great opportunities  Such as quality bidding. |  |  |  |  |  |
| Technology has increased supplier competition |  |  |  |  |  |
| Technology has reduced financial and technical  risks. |  |  |  |  |  |

**Section C: Managerial implications of the existing technologies and recommend ways to improve to achieve sustainability**

1. Does the following options relevant to adopt in an attempt to achieve sustainability.

Key SA=Strongly Agree. A=Agree N= No Opinion SDA=Strongly Disagree,

D=Disagree

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Very Great**  **Extent** | **Great Extent** | **Moderate Extent** | **Little Extent** | **Very Low**  **Extent** |
| Capital investment on technology |  |  |  |  |  |
| Early supplier involvement |  |  |  |  |  |
| Employee training |  |  |  |  |  |
| Senior management commitment |  |  |  |  |  |
| Encouragement of user acceptance  and readiness |  |  |  |  |  |
| Efficiency risk management |  |  |  |  |  |

2. What do you recommend as ways to improve the effective use of e-procurement at this company?

…………………………………………………………………………………………

…………………………………………………………………………………………

……………………………………………………………………………………

**THANK YOU FOR YOUR CORPORATION.**

# **APPENDIX IIII INTERVIEW GUIDE**

1. **Background information**
2. Briefly tell us your qualifications.
3. When did you start working at ZIMSTAT?
4. What is your job description?
5. What is your capacity in this organization?
6. **Establishing the effects of e-procurement in the procurement department.**

1. what do you understand by the term e-procurement?

2. What technology tools are used at this company?

3. What can you say about the use of e-procurement in the procurement department?

4. Which procurement processes use technology?

5. What are the effects of e-procurement on these procurement processes?

6. What are the overall effects of e-procurement on the procurement department?

7. Suggest possible measures to nurture the adoption of technology in the procurement department?

8. Any recommendations to management.

**Similarity index**

