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MASTER'S THESIS

RESEARCH ON ACCOUNTING INFORMATION SYSTEM AND DECISION-MAKING

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ABSTRACT

RESEARCH ON ACCOUNTING INFORMATION SYSTEM AND DECISION-MAKING

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We are living in an era of information and technology in which organizations are conducting their business activities with the touch of technology to improve their performance and work efficiency. Majority of researchers have shown that information system does have a positive connection with decision making. Accounting information system (AIS) is one of essential components of modern information. The basic objective of the thesis is to examine the impact of Accounting Information Systems (AIS) on the organizational decision-making. This research would add value by providing a significant contribution towards the use of AIS practices among manufacturing and service companies in Istanbul, Turkey. This study has used a quantitative research designing method in collecting primary data through using survey questionnaires. The survey questionnaires were distributed among 100 different small and medium size manufacturing and service companies in Istanbul, Turkey. The collected data have been analyzed through Statistical Package for the Social Sciences (SPSS)-25 program. The findings of this study has reflected the results of previous studies that there is a significant relationship between effective AIS and better organizational decision-making. The results show that those manufacturing and service companies in Istanbul, Turkey can enhance their decision-making performance through good practices of AIS.

Key Words: Accounting Information System, Information System, Information and Technology, Decision-Making, Statistical Package for the Social Sciences (SPSS).

ÖZ

MUHASEBE BİLGİ SİSTEMLERİ VE KARAR VERME

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Kuruluşların performanslarını ve iş verimliliklerini artırmak için teknoloji dokunuşuyla iş faaliyetlerini yürüttükleri bilgiye dayalı ve teknolojik bir çağda yaşıyoruz. Bu araştırmanın katılımcılarının çoğu, bilgi sistemi ve karar alma süreci arasında pozitif bir ilişki olduğunu göstermiştir. Muhasebe Bilgi Sistemi (MBS), modern bilginin temel bileşenlerinden biridir. Bu tezin temel amacı, Muhasebe Bilgi Sisteminin (MBS) örgütsel karar verme süreci üzerindeki etkisini incelemektir. Araştırma, İstanbul'daki imalat ve hizmet şirketlerinin Muhasebe Bilgi Sistemine (MBS) yönelik uygulamalarını ele alarak literatüre katkıda bulunmaktadır. Çalışmada anket tekniği kullanılarak birincil verilerin toplanmasında nicel araştırma yöntemi uygulanmıştır. Anketler İstanbul'da faaliyet gösteren 100 farklı küçük ve orta ölçekli imalat ve hizmet şirketine dağıtılmıştır. Toplanan veriler, sosyal bilimler için istatistik paketi olan SPSS-25 programı ile analiz edilmiştir. Çalışmanın bulgusu, Muhasebe Bilgi Sistemi (MBS) ve örgütsel karar verme süreci arasında pozitif bir ilişki olduğunu gösteren önceki çalışmaların sonuçlarını yansıtmıştır. Elde edilen sonuçlar, İstanbul'da faaliyet gösteren imalat ve hizmet şirketlerinin etkin MBS uygulamalarıyla karar verme performanslarını artırabileceğini göstermektedir.

Anahtar Kelimeler: Muhasebe Bilgi Sistemi, Bilgi Sistemi, Bilgi ve Teknoloji, Karar Alma, Sosyal Bilimler için İstatistik Paketi (SPSS).

PREFACE

An organization has to make decision in each and every step, therefore the need of quality information for an organization is undeniable. Due to the remarkable contribution of information in decision-making, removing uncertainty, saving time, bringing prosperity and adding values in the organization led to the emergence of various types of information systems. Undoubtedly, AIS is one of them which has facilitated organizational activities and performances in millions of ways.

However, the purpose of the research is to investigate whether accounting information systems impact on decision-making process or not. In this information age, almost every business organization use information technology particularly accounting information system in their decision-making process.

But the question is, does the use of accounting information system really bring positive outcomes in organizational Decision-making? Very few researches have been conducted to this field. Majority of the researchers have found positive relationship between AIS and Decision-making but very few of the researchers have found the connection negatively, which has put a question mark in my mind that force me to conduct my Master's research on this field.

At the very beginning, It was bit difficult for me as it was my the first academic research but conducting extensive investigation has allowed me to finish the work successfully as well as to find the answer of the question that was wandering in my mind.

Throughout my MBA program especially during writing my thesis, I have received a great deal of support and cooperation. I would like to thank all of them who in one way or another have contributed in the completion of this thesis.

First of all, I would like to thank **Almighty Allah** for His blessings upon me until this thesis research is completed. I also would like to thank to my thesis's supervisor Prof. **Dr. Ahmet Türel Hoca** for his unconditional and continuous support to every single steps of my work. It is his supervision that this work has come into existence. I would also like to thank to all of my professors, lecturers from accounting department for

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Sheikh Nazmul Huda

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LIST OF THE TABLES

LIST OF THE ABBREVIATIONS

AIS: Accounting Information System.

IS: Information System.

TPS: Transaction Processing System.

MIS: Management Information System.

DSS: Decision Support system.

EIS: Executive Information System.

COSO: Committee of Sponsoring Organizations of the Treadway Commission.

GL: General Ledger.

FRS: Financial Reporting System.

MRS: Management Reporting System.

AAPA: American Association of Public Accountants.

ICAS: The Institute of Chartered Accountants of Scotland.

MIA: The Manchester Institute of Accountants.

CICA: Canadian Institute of Chartered Accountants.

SPSS: Statistical Package for Social Sciences.

INTRODUCTION

Accounting information systems work as a backbone for the growth and development of any organization. We may consider it as a wide window from where you can clearly see the structure and overall performance of the company. In this modern era, the rapid growth of information systems has introduced a dramatic change in the field of the business world.

In every aspect of our lives, we make a decision. In the same way, making a decision in the business world play an important role in the uplifting of the company but to make a fruitful decision, we need to have proper and accurate information. Eierle and Schultze (2013), gave an example regarding speedometer to emphasize the significance of information for making an effective decision in a company in which he asked a question, does speedometer matter for driving a car to reach our destination? In a logical manner, we don't need a speedometer to go to our destination but why does it imperative to use a speedometer? The speedometer is a very crucial tool for driving a car because, first of all, it helps us to drive a car within a speed limit to avoid accident risk. Secondly, it assists us to reach our destination on time (Eierle and Schultze, 2013; 1). In the same way, we may compare accounting information with the speedometer. The motive is, it also aids us to gather information from the past which helps us to avoid taking any sort of risky decision in near future. In the same way, it assists us to measure the current performance of the company which helps management to drive an appropriate and suitable decision to reach the company's goal on time.

Accounting is called the language of business due to its huge contribution for recording, collecting, categorizing, and summarizing all financial data to make precious economic and financial decisions but as a result of lacking proper information, the decision-making process sometimes loses its quality which brings poor outcomes of the company. That's why it's very urgent to build such an atmosphere that will train up their employees in learning computer usage (Akanfe & Tajudeen, 2014; 11). Agreeing with Akanfe, Someye (1989) also stated that the duty of

accounting is to produce relevant information so that managers can make an accurate decision but if a company make a decision without relevant information, it may affect negatively the development of the economy as a whole because the economic growth and accounting advancement move together (Someye, 1989; 76).

The usefulness and the effectiveness of financial information depend on the sources it comes from as it directly influences the goals and objectives of the company. So, to make accounting system more reliable, worthy, and believable, it's necessary for users to acquire profound knowledge to the related field (Virgil, W. date; 594) as well as at the same time, they need to be able to pace with the world and adapt to all kind of technology and information system.

Without any doubt, we may conclude that it's more than important for any kind of organization to give emphasis on their accounting information systems if they want to bring fruitful and effective results on their decisions.

CHAPTER ONE

In the chapter one, firstly we will briefly mention about the research questions that this study is going to answer in the chapter three and four, then this study will talk about the aim of the study, it will also talk about the motives behind this study. Subsequently, methodology and expected limitation will be discussed throughout this chapter as well.

1.1 RESEARCH QUESTIONS:

The research questions that this proposed in the study is going to answer:

1. Concept of Accounting Information System.
2. The Role of AIS in Decision-Making of an Organization.
3. The Relationship between Accounting Information Systems and Decision-Making.

1.2 RESEARCH OBJECTIVES:

We all are forced to admit in one sentence that in every company, accounting information is the main and primary factor that directly affects the company's assets, profitability as well as the development of the company. In addition, accounting information is used to prepare financial statements which are very crucial for managers to know the current financial positions and performance of the company as well as to make the right decisions. However, the main objective of this study is to determine how accounting information systems impact on decision-making process particularly in manufacturing and service companies in Istanbul, Turkey.

1.3 MOTIVES OF THE STUDY:

The study is very significant and needful. It will impose a huge contribution to the area of accounting information systems particularly in Turkey as well as to the other countries that use AIS in their companies because this study will help to take steps for setting up an excellent decision-making to improve organizational performance in terms of profitability and reputation. The consequences of this research will contribute to both theoretical and practical area of accounting information system's adoption and implementation in small and medium-size manufacturing and service companies

operation. In the same way, this study will be very much useful to other researchers or academicians who wish to carry out their research related to this field in the future.

1.4 METHODOLOGIES:

The research was conducted based on primary and secondary data. The survey research design method was used in carrying out this study. Primary data was obtained through a survey and secondary data was gathered through a textbook, academic articles, and other materials from the internet. The survey was conducted on manufacturing and service companies in Istanbul, Turkey. There were 23 questions in the survey paper and the questionnaires were distributed among 100 companies. Responsible managers or managements of those companies were requested to respond to the questionnaires with the answer which will depict their views. The use of questionnaires was ideal to me because it has provided confidentiality to the respondents, thus, they were able to act without any fear and embarrassment. Questionnaires were distributed to those companies via both the link of Google drive (by using companies email address) as well as physically. Even though it's hard to reach companies and distribute survey paper physically due to COVID-19. As I did not gather enough data through the Google drive link which forced me to go to companies physically to conduct the survey. Collected data were analyzed using SPSS-25 statistical technique. Some of survey questionnaires, data analysis and interpretation method of my thesis has followed the master's thesis paper which was written by Hussein Farah YUSUF under the title "The Effect of Accounting Information System on Management Decision: Empirical Evidence From Konya Province Manufacturing Firms"

1.5 SCOPE AND EXPECTED LIMITATIONS:

In my study, the investigation was conducted to determine the effects of accounting information systems on the decision-making process. Turkey, being one of the biggest countries in both Asia and Europe that belongs to 81 cities. That's why I have conducted my research based on Istanbul city which covers both Asian and European part. The study was derived among manufacturing and service companies. Primary data were collected only through survey papers. The time path of the research was restricted to 2020/21.

CHAPTER TWO

In the chapter two, at the very beginning, the study will shortly illustrate about the starting journey of accounting and today's modern accounting information systems. This chapter will also comprise the concept of information system, its components and their role in decision making. After that, it will also include the notion of decision making and its types, conditions, styles, models and process.

2.1 BRIEF HISTORY OF ACCOUNTING AND ACCOUNTING INFORMATION SYSTEM

History is an inevitable and essential part of this modern and advanced technological world as it influences our daily activities as well as it works as a mirror of our fashion, style, mode, custom, and tradition (Gomes et al., 2011;392). The history of accounting is millenary older. Accounting became a significant and noticeable part of our history after establishing a monetary system (Paris, 2016; 42). Accounting is as old as civilization. The concept of money and writing has derived from accounting. Accounting has introduced them to us (Olmide & Temitope, 2016;10). This is the reason why accounting history has been studied for numerous years by archeologists, sociologists, economists, and other historians (Richardson, 2008; 248). Accounting was originated by the human being to fulfill several demands (Farcas et al., 2012; 477). There is a long history behind today's modern accounting. According to Mukhametzyanov et al., (2017), the development of current accounting is the result of variation of its structure through improving its system over time (Mukhametzyanov et al., 2017;1229). There is no specific time phase about the origin of accounting but the evolutionary processes can be classified into three eras. Primeval era, at that time stone, clay and wood were used to record the transaction, medieval era is the witness of double-entry bookkeeping system whose aim was to analyze, classify and record the transactions for financial reporting and the modern era is the attester of advance bookkeeping with a heap of expurgation (Omagbon, 2015; 1394).

The birth of accounting took place in ancient Mesopotamia around five thousand years ago of a double-entry bookkeeping system. The development of agriculture and its business lead cities (Babylon and Ninevah) to turn into the center of commerce. During this period, transactions were kept by Scribes who are acquainted today as an accountant, lawyer, and attorney. (Alexander, 2002; 3&4). Before inventing the writing method, peasants in Mesopotamia cut out a system of counting. They used to use a different form of a sign as a way of writing which describes the goods that were produced in those days. For instance, a cone figure symbol indicates a mediocre quantity of Barley but a sphere mark represents a big amount of Barley (Berisha and Asllanaj, 2017; 158)

The flow of accounting in ancient Egypt almost the same as the Mesopotamians but the use of papyrus as a method of recording grants them to keep their records in a more detailed, explicit, and easier way. The internal control system was developed during this period. Bookkeepers' work was controlled by auditors which forced accountants to be honest and conscientious cause any sort of irregularities, indiscipline, and obliquity were punishable by charging a fine, amputation, or death. Those penalties were depends based on the level of crime (Anandarajan et al., 2004; 3&4). Egyptians didn't have a single unit of measurements to determine the value of products. Illiteracy and absence of coin money were the impediments for the betterment of their accounting system (Emmanuel, 2016; 5) because the Barter system was available during that time, trade was done in the exchange of goods and services.

The most significant achievement of Greek in the field of accounting was the commencement of coin money which brought a huge change and development in the banking sector. During that period, Bankers changed and loaned money to people. They used to transfer money from one city to another city through their branching bank. Government finance was controlled by public accountants and they were monitored by auditors. It has been informed from "Zeno Papyari" that management accountant was used to controlling company's finance which indicates that the controlling system that we use in today's business world, has been introduced by Greek more than two thousand years ago (Saidu, 2013; 5&6)

Accounting was a mandatory part of Roman citizen's life. It was required for them to present their statement of assets and liabilities to the government so that government can calculate their taxes. There were two books to keep their transactions. The adversary, which was used to record normal accounting activities. This is called Adversaria because transactions were written on both sides of the tablets. There were no restricted rules and regulations to record the transactions in Adversaria and the other one is Codex Rationum, which was more formal and systematic. There were two sections for recording the transaction. The first section was used for receiving which is called 'to have' and the second section was used to record expenses which are called 'to give'

The transactions were recorded on a separate page, 'accept page and expense page'. They also used 'Kalendarium' (one type of account book). This book was used as a book of interest in which the date of interest payment, the period of repayment of interest was written (Provasi & Farag, 2013; 80 & 81).

During the medieval period, barter was the primary way of conducting business. Accounting was motionless for thousands of years between the collapse of the Roman Empire and the rise of the double-entry bookkeeping system but thirteen centuries bear the witness of change by shifting their activities based on currency. (Gonzales-Lara, w. date; 3). The creation of money brought a remarkable change in social and economic activities in Europe which forced Europe to shift from a single accounting system to bookkeeping during 1000-1750 AD. During this period, Europe also experienced the rise of capitalism between eleven to thirteen centuries (Akinyemi et al.; 2015; 18 &19). During that time, transactions were recorded two times which brought many conveniences as well as accuracy in the company's balance sheet. Accrual, depreciation, and not paid charges were recorded in the profit and loss statement. There were also policies for inventory valuation. Internal control and audit were exercised. The balance sheet was used not only for internal control but also for calculating taxes. Managers were accountable to the administration with an explanation if they provide any big amount of loan to the business firm. However, there is also evidence that due to weak internal control, many banks have fallen in that time. A new tax system was established in 1427 which is called 'Catasto'. This tax

was imposed on income and property. According to this tax system, taxpayers had to submit the list of their property and the balance of the current year of their business (Catacutan, 2005; 5-8).

Without crediting Luca Pacioli, the history of accounting cannot be expressed properly. In 1494, in his book "*Summa de Arithmatica, Geometria, Proportioni et Proportionalita*", he described double-entry bookkeeping. During that time, His work influences widely the business activities in Venice. Before emerging Pacioli's book in Italy, Italian had a proper accounting system which is called the 'Italian method or Venice method'. It should be all known that the double-entry bookkeeping system was not invented by Pacioli. However, the rendering of his book contributed to the expansion of the Venice method which is known today as double-entry bookkeeping, He has just narrated the way of accounting system during that time in his book in which he referred that in all accounting, there must be two parties. One is a debtor and the other one is a creditor with accurate descriptions of goods, size of product, date, and prices. (Ovunda, 2015;136). It can be proven from "The Messari" which is the oldest book of double-entry bookkeeping in which the debit and credit system has existed. *Summa de Arithmatica, Geometria, Proportioni et Proportionalita* was the first printed book in Italy that talked about Algebra and introduced plus, minus symbol to Italian (Ambashe & Alrawi, 2013; 98). The rise of the double-entry bookkeeping system between fourteen and fifteen centuries was a point of time when traders started to merge into companies. They put their trust in managers by giving the operational responsibilities of the company (Samuel et al., 2017; 26). In the same way, the advent of this system leads Italian to spread its twig to the foreign institutions which are located in Italy as well as to several European countries (Cindea et al., 2011;19).

Regarding accounting, two models have been revealed with the advancement of the world. The first model was originated in Europe in 1673 in which the yearly fair value of financial statements was presented by the state to prove transparent financial reports so that both business and state don't encounter any sort of financial crisis such as bankruptcy. This system was incorporated in 1807 with Napoleonic commercial code which was very popular in Germany in 1870. This system was also used for tax determination in business in the 19th century. The second model arose after the

industrial revolution whose purpose was to conduct tight monitoring in the firm's activities so that they can provide information to shareholders. This second model also considers as an 'Anglo-Saxon' financial reporting method as it deals with the connection between company and financier, stream the information to the capital market (Mackenzie et al., 2012; 3&4).

With the passes of time, the business world began to expand. With the expansion of business functions, managers of the company emerged with a good structure accounting system so that they can report the achievement of the company to the owners.

The 19th century is the footprint of the industrial revolution which lead to bring enormous change in the field of accounting. This century also glanced the transformation of 'primitive industrial system' such as producing an agricultural product to 'Large scale industrial system' such as the genesis of new technology. During this time, Great Britain turned into a financial center by launching various types of industries which was the result of modern capitalism. Due to huge industrial prolongation, investors were needed for the companies to get more funds. At the same time, they also fetched big development in the accounting sector via circulation of cash flow statements, rating fixed assets, the origination of depreciation, and so on. (Watanabe, 2007; 21 & 32). Until the 19th century the purpose of accounting was to provide financial information to the users of the company and all the accounting activities were done manually such as data gathering, processing, storing, and reporting but at the beginning of the 19th century, the role of accounting changes from bookkeeping to company's strategic and decision-making aids (Bendovschi, 2015; 92&93). The termination of the 19th century and the commencement of the 20th century experienced the development of the international accounting system. During this period, several accounting professions were established throughout the world such as, The institute of chartered accountants of Scotland(ICAS) which was derived from the institute of accountants in Edinburg and Glasgow that was established in 1853, Society of accountants was formed in 1867 in Aberdeen, In 1887 the Manchester institute of accountants (MIA) was built, American association of public accountants(AAPA) was created in 1887, Canadian institute of chartered accountants(CICA) was originated in

1902 and London association of accountants in 1904 (Melnyk, 2013; 489). The accounting that we used today is not the same that was used during Luca Pacioli's time. The structure, rules, regulations, policies, methods have been changed. Today's accounting is much more complicated and systematically compare to accounting thousands of years ago. The way business activities have been expanded. In the same way, the duties of accountants have also been grown up. For example, nowadays accounting is used for periodic reporting, valuing assets, valuing costs, determining historic and market value, evaluating the financial position, and comparing them with other companies. Technological advancement has changed the feature of record keeping. Nowadays transactions are done through the computer with explicit explanation (Libina,2005;15-19). With the touch of technology, the Accounting field has been swift from manual bookkeeping to the computer base. In 1979 the invention of the 'VisiCalc' computer program pulled numerous benefits in the accounting sector. For example, it helped accountants to complete his task more quickly and easily. Previously, the work that would take a long hour to finish, accountants have become able to do such work within few minutes with the assistance of the 'VisiCalc' program. Continuously, the technology field brought another software program which is called 'QuickBooks' in 1998. This software was used by most of the companies for bookkeeping purposes. Apart from those programs, the invention of 'Excel' has contributed a lot to the development of the accounting sections. The improvement of modern technology especially 'cloud accounting has decreased the company's expenses by more than half. Technology has also added value in the service sector. Earlier data were interpreted manually but technological advancement has made it easier for accountants. Similarly, internal audits would take a long time to complete but now with the blessing of forensic accounting, standards service is given to customers through preventing fraud and irregularities (Cooke, 2015).

2.2 CONCEPT OF INFORMATION SYSTEM (IS)

In this modern technological world, information system is the most important and vital tool of an organization as it helps to bring both effectiveness and competitivities advantage of an organization by providing useful data and information (Almazan et al., 2017; 325). Data and information are considered as a back and forth of a coin where

data belong to the subjective part and information belong to the objective part (Callaos & Callaos, 2002; 3). We need to know about data, information and system before we know about information system.

2.2.1 Data and Information

Data is any raw fact or figure which is not processed yet, such as number, letters, image, sounds, etc. Data itself has no meaning but whenever those symbols or letters become meaningful and understandable, they turn into information (Rainer & Prince, 2016; 10).

If someone says a number, for example, 99.5. What would you understand? Either you will think of it as an exam score or FM radio station. Here, 99.5 is just called raw data because it has no specific meaning. But if you are told that Mr. Karim has a 99.5°F temperature, then you can easily understand that 99.5 is a person's temperature. Here, data have been processed into information. When data is processed and its full meaning is revealed, that data is called information. Information should be of high standards as it is used in decision-making. Approachability, safety, timeliness, realism, aptness, transparency is the nature of high-quality information (McGonigle & Kathleen, 2018; 19&20).

2.2.2 System

And the system is a group of elements (input, processing method, output, and feedback) that work with each other to achieve a fixed goal. The efficiency of the system depends on the relationship within those components. The man's duty of the system is to turn input into output (Stair & Reynolds, 2010; 8).

2.2.3 Information System

The industrial revolution leads to the economy and the business world growing very fast. With the advancement of technology, the demand for information has been increased which turn this century into an informative epoch. As the demand for information is enhancing day by day, the necessity of better systems also craved for making a good decision, planning, and controlling process. Hence, the information system gradually transferred according to the need of time (Alikhani et al., 2013; 359).

Information systems refer to a system that collects, processes, stores, examines, and promulgate information for special and specific motives. Nowadays, an information system refers to mostly computer-based information system that consists of hardware, software, procedure, and people (Rainer & Cegielski, 2011; 38&40).

According to Paul, Information system is a system that refers to a system of people where data is processed into information for an organization. To perform such activities, specific application software is used which is the part of information technology (Paul, 2012; 95)

Information systems have an intimate relationship with the human being. No matter what, even if the system is automated or self-moving, it still requires people to set up, run and work with (Land, 1985; 211). Alter asserted that an Information system is a working system where people and devices perform their function through various process and activities (such as delivering information to the customers, communicating between administration to the general employee, etc.) by using information and technology so that they can provide quality services both inside and outside customers of the company. The information system is also an undivided part of other systems. It becomes pointless if one system is removed from another which leads to stopping the whole system (Alter, 2008; 452&453).

2.2.4 Components of Information Systems and Their Role in Decision-Making

According to Susanto and Meiryani (2019), Information system is the combination of various types of system which are used to decide a different level of an organization. It contains a transaction processing system (TPS), management information system (MIS), decision support system (DSS), and executive information system (EIS) (Susanto & Meiryani, 2019; 145&146).

2.2.4.1 The Transaction Processing System (TPS):

According to Rahmatian (2002), TPS is a system that gathers data of business events, penetrate them into the system, store them in the database, recuperate them from data for processing and finally turn them into useful information for ultimate users which

help the organization to run their business (Rahmatian, 2002; 482). TPS belongs to three functional areas. The first one is the system's routine function. In this function, TPS creates such a circumstance that confirms fairness, accessibility, and indemnity of data so that authority can maintain punctuality providing data at right time to the right place and the second function is the system administration function. In this function, TPS allows administration or ultimate users to handle, control, or governance the system. The third and the last one is the application development function which provides a function to enter data, carry put traffic inside the computer (Amin et al., 2012; 11&12). The transaction processing system (TPS) is the fundamental part of information systems. Most of the company use this information system to operate their operational activities. To conduct operational activities, TPS assembles data, processes it, then stores it in the database. The duty of this system is to maintain daily routine activities such as invoicing, payrolls and receiving orders, etc. The advent of TPS have removed manual procedure and lead company to perform their routine activities more efficiently. There is some process that TPS follow. First of all, it generates documents such as invoices, purchase orders or payroll, etc. After that, those documents are separated into two parts, First action documents. It refers to that action has already been taken and the second one is information documents. It assures that transaction has occurred. At the last, database queries are conducted, through these queries, the company can know all the transactions processed within a specific period of time. It also delivers the list of unduly processed transactions (Alcami & Caranana, 2012; 27).

2.2.4.2 Management Information System (MIS):

A wrong decision can be a reason to bring endless suffering for an organization. That’s why the fundamental part of an organization to make the appropriate and right decision. The company’s management plays an important role to make a decision efficiently. To make management information more efficient, there is no alternative to have a better management information system because decisions are made based on the information that is provided by MIS. The role of MIS in decision-making is undeniable due to its organized tools and well-timed information. It also provides management many choices during decision making which supports them to make an accurate and proper decision (Singh & Kaur, 2012; 5&6). MIS refers to a system that

gathers, processes, depots, and dispatched pertinent information to the management so that they manage operational activities of the organization (Ajayi et al., 2007; 110). The duty of MIS is not only to plan, monitoring and running the organization but also to make the decision-making process easier. Thus, MIS contributes to enhancing the utility of the organization through maintaining expenditure and ameliorating the processing system (Harizanova, 2003; 3). The data which are collected by the transaction processing system (TPS) is used by MIS to prepare a report for management (Belle et al., 2001; 3)

According to Mahsaneh (2015), MIS is a computer base, a basic information system that aim is to provide information to the decision-maker in a timely manner (Mahsaneh, 2015; 75). MIS assist different level of management in a various way of an organization. To top-level management, it aids in making strategic decisions. To middle-level management, it helps to make a tactical decision by providing a performance report which helps management measuring or forecast the future performance of the company and to the lower management, it supports continuing their daily activities (Nowduri & Al-Dossary, 2012; 127). MIS collects intestinal data from system and turns them into the necessary and suitable shape of information for providing a report and supporting in decision making (Al-mamary et al., 2013; 10)

2.2.4.3 Decision Support System (DSS):

The success of an organization depends on the information it uses to make a decision. The quality of information relies on its application and use. Nowadays computer base information systems support an organization making a decision through processing a huge amount of data. There are different categories of information systems. DSS is one of them

According to Tripathi, DSS is a computer-based information system that is the compilation of model, human, software, hardware, and other devices that serve management as a solution to both semi-structured and unstructured problems. It controls a huge amount of data which are collected from both internal and external sources in order to provide information to the decision-maker according to their needs (Tripathi, 2011;112). According to Bruwer et al., (2018), In term of analysis, DSS is

more useful than MIS due to its huge contribution of analyzing both internal and external data by using various models (Bruwer et al., 2018; 109)

DSS is a system that tends to place a lot of emphasis on the institution rather than any person or community. DSS consist of three subsystems. The first one is the data management subsystem. Data that is used to make a decision comes from this system because it gathers data from both insider and outsider sources which facilitate the decision-making process. The second one is the model management subsystem which creates various model such as statistical, mathematical, operational, etc. for upper-level management and the last one is the dialogue management subsystem that is used to maintain connectivity within the system effectively (Madyala, 2012; 13&17)

DSS is used to solve particular business problems. Nowadays, mega-corporations used DSS as a solution to several problems such as problems with the content of the meeting, members attend in the session with no preparation, members absent or delay in the assembly, etc. (T.ong, 2014;169&170).

DSS basically helps an organization to buttress constructing, modeling, and problem-solving. The senior management department uses DSS to make complex decisions such as statistical or tactical decisions. This system works as an aid to improve the accessibility of information as well as retrieval of data through building models (Druzdzel & Flynn, 2002; 6).

The responsibility of IS has been changed and extended over time. Up to 1960, the nature of IS was to conduct a transaction, keep a record, and processing but with the passes of time, the duty of IS shift from processing data to useful information, and thus, the idea of MIS has risen. During 1970, it was observed that MIS was not able to provide enough support in decision making. Hence, the notion of DSS was revealed. In 1980, the world bears the witness of appearing of several roles of IS such as microcomputer processing, different software package, etc. This year are regarded as a golden year in the field of information system. It also experiences that the administration neither follows the report of MIS nor the analytical modeling of DSS. Thus, the concept of EIS was born which facilitates executives a wide way of finding information (O'Brien & Marakas, 2010; 10&11).

2.2.4.4 Executive Information System:

The executive information system (EIS) is considered as one sort of management information system that gleans information from both interior and exterior sources in order to provide easier access of information to the executive management in the decision-making process (Tole & Matel, 2016; 1&2).EIS provides data to the upper-level management of the company after collecting them from various sources which assist executive management in conducting strategic functions such as target fixing, planning, predicting and observing performance, etc.(Lungu & Adela, 2005; 19).EIS is often viewed as an extensive version of a decision support system due to its ability to explore data and handling organizational performance as well as exhibiting the company's scope and problems. It also provides management drill-down capabilities which mean EIS is used to make reporting in a very efficient and meaningful way so that users can visualize data in a more explicit way (Azad et al., 2012;106)

Technologically, the world is advancing very fast. The need of people is changing with the advancement of technology. Only those companies that have been adapted to both technology and human needs by adjusting new innovation, have been able to survive in this competitive business world. The success of any organization in the recent year directly related to the information system and proper use of it, because information system has brought both tangible and intangible benefit for the company through recognizing both internal and external problems as well as weakness. It has helped the company to keep sustainable financial stability (Lipaj & Davidaviciene, 2013; 38 & 44).

2.3 CONCEPT OF DECISION MAKING

Decision-making has been involved in human actions since the starting of the world. The term decision has originated from the Latin word 'decisionem' which means order, settling or resolution (Gajda & Eva, 2017; 73).

We have to make the decision in every aspect of our lives. In daily life, we have to think in advance (decide) where to go, what to eat, and what subject to study, etc. In point of fact, every step we take is the outcome of the decision that we made

(Kudryavtsev & Pavlodsky, 2012; 316). Manager of an organization has to make numerous decisions in order to conduct operational and strategic activities. Decision making is a very significant and responsible task for a manager because decision making not only related to the organization but also have an intimate relationship with employees, stakeholders, etc. (Negulescu & Doval, 2014 ;858). Decision making is a very hard and risky task because the success or failure of an organization directly depends on it. A bad decision can be causing a lot of losses to an organization. There are many reasons behind a bad decision such as, not picking up the best alternative among alternatives, not using authentic information from a reliable source, sometimes it is connected with decision maker mental circumstance (Hammond et al., 1998; 1)Different scholars have defined the definition of Decision-Making in various ways that are given below.

According to Obi & Arwu (2017),	Decision-making is a process in which decision-makers select the best alternatives to acquire their longing results (Obi & Arwu, 2017; 2).
According to Omarli (2017),	A decision is a mirror of the previous action and its results have a connection with the future (Omarli, 2017; 86)
Following to Schoemaker & Russo (2016),	Decision making is a process by which a particular person, community, or institution decides what kind of steps to take in the future based on their existing available resources (Schoemaker & Russo, 2016; 1).
In accordance with Lopez et al., (2017),	Decision making and problem-solving are interrelated and work as an expletive to each other because problem-solving is a serial process whose first step starts with decision making (Lopez et al., 2017; 3).

However we can say that starting anything new starts with making a decision. Maybe, the decision is wrong or right. The wrong decision gives experience and the right decision opens the door to take a new decision

There are two viewpoints of decision-making. The first one is the normative view which indicates what might happen and how an ideal or rational agent would perfectly perform the work whereas the descriptive model tell how it actually happens (Kadarova, 2015; 253)

2.3.1 Types of Decision

2.3.1.1 Individual and Group Decision:

The enrichment of an organization relies on the attitude of the individuals associated with it. That's why, the organization should inspire its individual in such a way that incessantly encouraged them to make a decision and assure that the goals of the organization are reached (Sharpanskykh, 2009;1). As we live with a certain group or community. We always make a decision as a group because of any problem there (Galam & Zucker, 2000; 644&645). A group decision is a process by which a specific decision is reached based on the responses of different individuals (Anca, 2008; 94). Two things that are very important in a group decision. How to turn the individual ideology of a group into a single ideology and how to form a group choice from individual preference (Saaty, 2008; 95). Group decision-making can be done through various dimensions. In the consultative decision-making process, the chief always discuss with other members of his group before taking a decision but in the case of democratic decision making, the group members are given a problem and their decisions are given priority to solve the problems (Lunenburg, 2011;1) The prime distinction between individual decision making and group decision making is that individual decisions are made to solve routinely problem of an organization but group decisions are given priority in case of taking any big, significant strategic decisions of an institution (Panpatte & Takale, 2019; 75)

2.3.1.2 Organizational and Personal Decision:

Organizational decision-making is a process that consists of one or more units of an organization through which decisions are made on the behalf of the organization. This decision-making unit can be as tiny as a person or as massive as a whole institution.

According to Chester Barnard, cited in Huber (1981) where he referred that Organizational decisions are not made to fulfill individual objectives but to complete organizational goals (Huber, 1981; 2). If an executive makes an institutional decision based on his or her personal ability or power, then it's called a personal decision but if an executive makes a decision based on institutional ability or capability, then it's called an organizational decision. The personal decision may have a negative impact on organizational activities, for example, if an executive leaves the organization, then his or her decision will be replaced by someone else in organizational decision making but for personal decision making, it is not possible (Ejekwu, 2018; 1031&1032). The main difference between organizational decision making and the individual decision is that individual decision making is based on a person believe, knowledge or his own values which may or may not be appropriate but organizational decision making is the combination of different units' belief, knowledge, and their values (Alhussayen, 2009 ;18).

2.3.1.3 Non-Programmed and Programmed Decision:

Non-programmed decisions are associated with risk and uncertainty because these decisions are made in such an environment and condition which is completely new to the manager. Therefore, the manager does not have enough information to make fruitful, rational, and alternative decisions (Dimkovska, 2016; 41&42). Non-programmed decisions are rarely made in organizations compare to programmed decisions. These decisions are only made to solve intricate, significant, and non-routine problems such as the decision whether the company should merge with another company or not, whether to open a new branch abroad or not, etc. (Kreitner, 2009; 216).

According to Negulescu & Doval (2014), the Majority of decisions in an organization belong to the programmed decision but some decisions are the results of the influence of environmental conditions (Negulescu & Doval, 2014; 863).

Programmed decisions refer to those decisions that the manager of an organization has already been confronted with many times in the past and has a lot of experiences with those decisions. Therefore, these types of decisions always bring positive and desired

for the organization within a short period of time (Celestina et al., 2018; 516). Programmed decisions are used to solve routine and repetitive problems of an organization through a harmonious and structured environment due to the availability of decision's models, regulations, policies, and process (Obi, 2016;10).

2.3.1.4 Strategic and Operational Decision:

Strategic decisions are considered a major part of an organization due to their momentous contribution for conducting organizational activities and survival (Mori, 2010; 61). Strategic decisions have a lot of influence on the future of the organization because which path a business institution should choose and where that path will guide the institution is determined by strategic decisions (Ivan & Ivana, 2012; 8). The evaluation of an organization relies on its performance and the performances are measured based on its constant return or profit. Strategic decision plays the most important role behind this profit, for which guidelines are provided by senior management (Alhawamdeh & Alsmairat, 2019; 95). A strategic decision is an upper-level decision that is made by the top-level management of an organization. In most cases, these decisions are unstructured and fanciful (Ikram & Krit, 2019; 461) which are different from tactical and operational decisions (Jankelova, 2017; 87). According to Allen, Coates, and Woods (2009), Strategic decisions are the combination of leading skills and the study of management (Page 1). These decisions actually involve a high level of uncertainty, nonroutine activities, complications, and long-term outcomes (Mehrotra & Gopalan, 2017; 62). On the other hand, operational decisions are known as routine decisions. These types of decisions are made by the lower-level manager. According to Obi, operational decisions is a daily basis decision that helps the company to perform its day-to-day activities efficiently (Page 8). These decisions are made quickly in the light of past experience. Operational decisions are basically ad hoc and precise. They are made in the event of an immediate change or unexpected circumstance (Smirnov et al., 2006; 1). The main purpose of the operational decision is to maximize the effectiveness of the company through conducting its operational activities such as improving the working environment of the company, using existing resources wisely, excellently maintaining the company's machinery, tools, etc. where the job of strategic decision is to extend the company's operational functions, merging

the company with another company, introducing a new product in the market, opening a new branch in another place, etc. (Panpatte & Takale, 2019; 75)

2.3.2 Decision-Making Conditions

There are three sorts of decision-making conditions. In another word, all the decisions are taken under three circumstances such as under the circumstances of certainty, risk, and uncertainty. From time to time, managers realize the conditions of a decision completely but at some point, they have to decide on some clues and hints (Griffin, 2016; 102).

3.3.2.1 Decision Making Under Certainty:

It refers to a circumstance in which managers are conscious and know about all the information which are required to make a decision (Naylor, 2004; 279). Certainty is always considered as the most ideal situation of deciding because managers can take proper decisions as the results of each alternative are known to them but in most cases, manager's decisions are not certain (Robbins et al., 2013; 83&84). For instance, if you want to decide on ordering stocks because the products or goods in the stocks have fallen under the determined level, in this case, decisions are regarded under the condition of certainty because you already know how many goods or products you need to order.

3.3.2.2 Decision Making Under Risk:

It is hard to make decisions under risk but making a decision under risk is a primary ability to become an excellent manager. According to Naylor (2004), Risk refers to a state where decision-makers have a clear target and related information to make a decision but results may change over time. In other words, it's a state in which managers are aware and conscious about each alternative but can't guarantee their outcomes. Decision-making is considered under risk in terms of two probabilities. The first one is the objective probability which means to rely on historical data or experience and the second one is the subjective probability which refers to make an estimation based on experience or judgment (Naylor, 2004; 280). According to Willows & Connell (2003), Risk is the sum of the probability of an outcome which

often considers the chance of occurrence of a particular situation of events and the magnificence of the probable events connected with those exposed to these risky events or states (Willows & Connell, 2003; 43).

3.3.2.3 Decision Making Under Uncertainty:

It's unfortunate that today's business world is highly influenced by various sorts of uncertainty that's why it is hard to find an optimum alternative because, in a myriad of problems, most of the decisions are made under the state of uncertainty (Merigoj, 2015; 94).In general, decision making is a process of making choice between two or more alternatives but decision making under uncertainty refers to a process of choosing between two or more alternatives however in this case, the outcomes of the actions are unknown and uncertain (Schultz et al., 2010; 13). According to Kurhade & Wankhade (2016), Uncertainty is a condition where decision-makers don't have enough knowledge regarding the outcomes, and decisions are made based on insufficient knowledge about the project. Uncertainties emerge from three sources such as data errors, forecasting errors, and model errors. Data errors related to technical problems. Forecasting errors related to the uncertainty regarding future events and model errors represent residual error that is the product of variance between observed and model values (Kurhade & Wankhade, 2016; 417). When decision-makers make a decision under a situation of uncertainty, they should:

1. Make a listing of all workable and usable alternatives that are obtainable for collecting information, for examination, and for actions.
2. Make an inventory of all the occurrences which may take place
3. Organize all the relevant information and make a presumption.
4. Classify the outcomes emerging from diverse directions

Calculate the likelihood of an uncertain occurrence that may occur (Pazek & Rozman, 2009; 1).

2.3.3 Decision-Making Styles

Over time, various decision-making styles have been developed and scholars have defined them in a miscellaneous way. Scott & Bruce (1995) have defined decision-

making styles as a habitual pattern that people use in decision making and it has no connection with an individual's traits. According to them, there are five decision-making styles. The first one is the rational decision-making style in which decision-makers prepared themselves previously to make decisions and decisions are made based on logic and deep analysis. The second one is the intuitive decision-making style which is the opposite of the rational decision-making style and decision-makers in this style make the decision based on their hunches and feelings without strong reasoning. The third one is dependent decision-making style which refers to a circumstance in which decision-makers rely on other support and direction. The fourth one is the spontaneous decision-making style. In this style, decision-makers decide a very quick and hasty way and the last one of decision-making style is avoidant decision-making style which refers to those decision-makers who are afraid of making the decision and always prefer to delay or avoid making any sort of decision (Scott & Bruce, 1995; 820 & 823).

According to Kinicki & Williams (2016), the decision-making style of a decision-maker is the reflection of how that person has understood and respond to the information. Decision-making style can be changed from two different degrees. The first degree is the value orientation which refers to the decision-making step of the people in which they need to be either technical and task concern or social concern. The second degree is the tolerance for ambiguity which maintains relations to an individual tolerance for ambiguity (Kinicki & Williams, 2016; 206).

However, the most popular and universally accepted model of decision-making styles was developed by Rowe & Boulgarides in 1992. According to them, decision-making is the reflection of an individual cognitional complexity and values which illustrate an individual's individualities, self-capabilities, interior competencies, and problem-solving skills. They have classified four types of decision-making styles such as directive, analytical, conceptual, and behavioral.

2.3.3.1 Directive Style:

The people who use this decision-making style have a low tolerance for ambiguity and also have low cognitive complexity. This decision-making style also considers an

autocratic style because decision-makers decide on this style based on their thoughts, rules, experiences, and knowledge. These types of people are more focused, aggressive, and dominant. They try to make the decision more quickly and solve the problem within a short period. They generally make decisions based on verbal information rather than written information.

2.3.3.2 Analytic Style:

The people who use this style have more tolerance for ambiguity compare to the directive decision-making style. They also belong to higher cognitive complexity. They are more beneficial to respond to a new and uncertain situation because they are very willing to analyze any situation in a detailed way. These types of decision-makers take more time to decide because they focused on every single detail. They prefer written reports rather than verbal reports.

2.3.3.3 Conceptual Style:

This type of person has a higher tolerance for ambiguity. They concentrate on problem-solving from widen perspectives and try to put into consideration many options based on the data that have been collected from various sources. This type of people also focused on organizational staff rather than work. They are generally open-minded, trustworthy worth and shared information with other staff in the organization. They are creative and smoothly can realize intricate relationships.

2.3.3.4 Behavioral Style:

This type of people has low cognitive complexity. However, they are highly aware of organizational development and value all the subordinates who work in the organization. In most cases, they are people-oriented. They prefer exchanging information and maintain sociality by keeping a better relationship with other employees. They always try to eliminate any sort of conflict. They also prefer verbal communication rather than written communication (Rowe & Boulgarides, 1992; 29 &30).

2.3.4 Decision-Making Models

Managers in all financial and non-financial institutions always face various issues such as managing organizational staff, resources and setting organizational plans, strategy, etc. Decisions need to be made to address these issues and to do that, According to Kinicki & Williams (2016), managers follow two sorts of decision-making models. The first one is the rational model which is also known as a classical model and the second one is the non-rational model. To make a rational decision, decision-makers have to go through four sequential steps such as recognizing the problem, inventing an alternative solution, assessing the alternative, picking the solution and the final step is to implement the solution (Kinicki & Williams, 2016; 190).

2.3.4.1 Rational Model:

The rational decision-making model is the opposite of the intuitive or irrational decision-making model which is also considered as the most advance and progressing decision-making model. In this decision-making model, decision-makers make decisions through multiple steps using facts, information, and analysis. This model is usually applied to make an important decision at the highest level of an organization (Wzonwanne, 2016; 1&2). In other words, we can say that it's a fact-based decision-making model. According to Carpenter et al., (2010), the Rational decision-making model refers to sequential multiple processes that are required to follow for any decision-makers to maximize their results. Therefore, for any decision-maker who wants to make the right decision through maintaining formal steps, a rational decision-making model is the best option for them (Carpenter et al., 2010; 474). Agreeing with Kinicki's word, Halabi also stated that a rational decision-making model follows the following series of steps:

1. First of all, decision-makers need to realize and identify the problem very well.
2. They need to make an extensive query for all alternative options and their probable outcome related to this problem.
3. They need to evaluate each alternative unbiasedly to find out the feasible outcome of them. Then they need to select the best alternative to implement.

4. Controlling the outcome of the course of action to calculate the success concerning objectives.
5. The rational decision-making model doesn't mention any filtering and constraining influence in the organizational decision-making process as a whole and avoid the effect of political behavior on this process (Halabi, 2019; 369)

2.3.4.2 Non-Rational Model:

According to Herbert Simon who is a Nobel Prize winner, stated that it's hard for any decision-maker to take all the decisions logically due to rational limitation (such as complication, time, money, cognitional receptivity, value, ability, nature, etc.) which is also known as bounded rationality. That's why non-rational decision-making models are used. In general, these models are more descriptive which illustrates how decisions are made. Managers usually take into consideration that making a decision using this model is difficult and uncertain. There are two non-rational decision-making models such as 1. Satisficing and 2. Intuition. The target of those managers who use satisficing model is to keep searching for alternatives until they detect appeasement or enough outcomes rather than optimal solution. On the other hand, the intuition decision-making model refers to decide without having any conscious conception or logical hypothesis. Making a decision based on intuition decision-making model bring two conveniences. Firstly, decision-makers are allowed to decide in uncertain and unfamiliar circumstances quickly and effectively especially during tight deadlines. Secondly, this model also becomes useful to those decision-makers who have to decide with confined materials or resources (Kinicki & Williams, 2016; 196&197).

2.3.5 Managerial Decision-Making Process

Decisions are a process, by which predestined goals are acquired. Every single decision is the result of an ongoing or continuous process (Al-Tarawneh, 2012; 5). The most and significant task of decision-making is to identify decision-makers and stakeholders (who are a listener of decision) because, if the decision-makers are identified at the beginning of the decision making then it will aid abating the probability of discrepancy regarding problem setting, requirements, objectives and

standards (Baker et al., 2001; 2). In decision making, there are some consensual processes that are described below

2.3.5.1 Identify Problems:

Problem identification plays an important role in successful decision making and reaching the set goals of an organization. According to Einstein, cited by Lopez-Cabrales & Bornay- Barrachina (2019), if he had an hour to save the world, he would spend fifty-five minutes to identify the problem and only five minutes to trace the solution (Lopez-Cabrales & Bornay- Barrachina, 2019; 65). According to Charles Kettering, "A problem well defined is a problem half solved". The journey of decision-making starts with the presence of problems. The duty of decision-making is to solve the problems in order to achieve organizational goals. What steps are to be undertaken in the next in decision making are determined by problem identification (Haris, 2012; 4). The identified problem statement must be submitted in a writing form with the consent of decision-makers and stakeholders (Fulop, 2000; 1).

2.3.5.2 Generating Alternatives:

After finding or identifying the problem, the next step of the decision-making process is to generate an alternative to the problem. In order to manifest this alternative solution, first of all, the organization should set their goals which they want to earn through decision making. Once the goal has been set, the organization needs to search for an alternative to reach that goal. In this case, authorities must gather information about each alternative and its potential consequences that can be happened (Lunenburg, 2010; 4). According to Aithal & Kumar (2017), Decisions have to be made when there are many alternative solutions available to a single problem because a single solution to a single problem does not require any decisions to make. That's why decision-makers attempt to figure out various alternatives as a solution to a problem in the light of their past experienced or through a new innovative idea so that they can get their desired result which they expect (Aithal & Kumar, 2017; 54&55)

2.3.5.3 Evaluate Alternatives:

After generating alternatives, the authority must evaluate each of the alternatives because, with each alternative, there is a risk of incertitude. Therefore, it is necessary to examine each alternative to find out jeopardy, probability, and tangle that have been involved with that alternative and to do this analysis, various instruments are used such as linear programming, cost-benefit analysis, PMI method, etc. (Ahmed & Omotunde, 2012; 52). According to Delbecq et al., cited in Power (2002), The most vital and meritorious phase in the decision-making process is alternative evaluation in which decision-makers focus on brainstorming for creating new ideas by using nominal group brainstorming tool (Power, 2002; 47).

2.3.5.4 Choose Among Alternatives:

According to Harrison (1996), Decision making is a continuous process. In this process, when a decision-maker selects the best alternative out of many alternatives is called choice (Harrison, 1996; 49). In the case of alternative selection, the priority must be given based on collected information, analysis, and evidence (Sharp, 2016;13).

2.3.5.5 Take Action:

And the last step of the decision-making process is to take action. Action must be taken to implement a decision. Whether a decision is wrong or right is determined by taking action.

Budget plays an important role in taking action because a budget is a financial plan that supports a company to implement its decision into reality (Ware, 2015; 4). According to Asopa & Beye (1997), in this last phase, the decision-maker has to decide who will do what, where, when and how, etc. That's why, the organization needs to make an adjustment among employees, finance, and materials to implement their decision into reality.

CHAPTER THREE

The most important chapter among all the theoretical chapters is this third chapter where the answers to the questions that this research paper was looking for at the beginning are presented in a very perfect and beautiful way.

However, at first, the chapter has started its discussion about the relationship of AIS and internal control, then it has talked about the conception of internal control, its types, objectives, components. After that, it has discussed about the concept of AIS, its subsystems, elements, users, principles and its features. This chapter has also mentioned about how AIS add value to an organization, its role and significant in decision-making as well as in organizational performance. This chapter has also discussed about how AIS maintain its relationship with decision-making to enhance organizational performance and, most importantly this theoretical study didn't forget to provide a detail discussion regarding the relationship of AIS and Decision-Making in the light of literature review which this study was trying to seek to answer at the very beginning of this study.

3.1 ACCOUNTING INFORMATION SYSTEM AND INTERNAL CONTROL

AIS has turned into a complicated system, which itself requires developing a control system in its internal setting like control rudder and control standards. Hence, the emerging of the internal control system was established by AIS itself (Fanxiu, 2016; 9.2). Internal control of an accounting information system refers to all relevant rules and regulations of an organization that assure that the general business activities of accounting in an organization have been performed in accordance with accounting principles and accounting system. According to Luo (2017), the fundamental duty of an accounting information system is to provide true and reliable information to the users so that they can make the right decision. An efficient internal control contributes a lot behind making appropriate decision as well as enlarging company successfully because the core objectives of internal controls are to ensure the truth and integrity of accounting information which confirm the safety of assets, minimize financial deception as well as a potential risk. On the other hand, companies can experience

huge losses if they fail to implement effective internal control. The author also referred to the investigation results of Loyalty and Guarantee companies of the united states in which they mentioned that 70% of organization's bankruptcy occurred due to the absence of proper internal control (Luo, 2017; 17). Based on the statement of Romney & Steinbart, which was cited by Rashedi & Dargahi in 2019, An efficient internal control must be present in every process of accounting information in order to reach the company's objectives, accelerate performance as well as reducing jeopardy (Rashedi & Dargahi, 2019; 34). According to Hopwood & Bodnar (2013), AIS plays a remarkable role in the internal control system of an organization. The internal control system provides the right direction and advice for proper management and control of the organization's activities. The biggest responsibility of management is to protect the organization from all possible losses such as incautious use of materials, failure to buy a product from suppliers, unskilled labor as well as direct stealing. In this case, strong internal control is the key matter for useful management of an organization as it was designed to provide reasonable assurance regarding the achievement of objectives such as reliability of financial reporting, promote operational efficiency and compliance with applicable law and regulations (Hopwood & Bodnar, 2013;12). So, if companies can acquire the capability of adjusting the computerized method of the internal control system in accordance with AIS, then they will be good enough to provide reliable and acceptable financial information to the ultimate users which will enhance the effectiveness of any organization.

3.2 WHAT IS AN INTERNAL CONTROL SYSTEM?

According to Rue & Byars, cited by Susanto in 2017, The process which is used to confirm that all activities of an organization have been performed according to plan is the internal control process which compare the actual performance with the set standards or goals and if there are any errors, they are corrected (Susanto, 2017; 5523) cause this system was established as a safeguard of organization's assets, diminishing fraud and errors in daily operations. Internal control is needed in every organization to provide expected information to the users. Recently, internal control has become an important matter due to frequent financial scandals in the business world. According to Leng & Ding (2011), in recent years, many companies have been accused of

financial scandals and collapsed such as Enron, World- Com, Xerox, Guangxi, and China Aviation Oil etc. and the only reason behind this accident is the incapability of implementing proper internal control and the scarcity of financial information manifestation (Leng & Ding, 2011; 286). Therefore, it is crucial to have an internal control system to monitor the efficiency and effectiveness of organization's functions, cut down property loss risk as well as enhance the quality of reporting according to laws and regulations. According to Alharbi (2017), Internal control is considered as an important factor in the maintenances and preservation of assets and property of the organization as it plays a significant role in achieving the general goals of the organization such as acquiring probable profitability, protecting the right of shareholders, etc. through applying proper strict system as internal controls are implemented on top-level management and financial activities in order to justify the legitimacy and true embodiments of organization's functions which confirm that all departments have performed their activities in according with laws and they are promised with the laws (Alharbi, 2017; 232).

3.2.1 Types of Internal Control

According to Moeller (1997), internal control can be categorized into two classes. The first one is the accounting control and the second one is the administrative control.

3.2.1.1 Administrative Control:

It includes the plan of organization, methods, and procedures which concern the decision process directing the management's authorization of transaction and this authorization is the duty of management which is directly related with the responsibilities for reaching the goals of the organization and also a beginning points for setting up accounting control of transaction (Moeller, 1997; 257)

3.2.1.2 Accounting Control:

The primary purpose of accounting control is to make financial information more accurate and reliable and to protect an organization's assets. It's a core responsibility for any organization is to make sure that its assets are saved and free from any sort of misuse. That's why it's an urgent task for the organization to develop

a better internal control to defend the business against any possible loss such as plunderage, failure to buy products from lower price suppliers, abuse of materials and supplies, etc. In this situation, the development of accounting control aid organization to develop and undertake sufficient plan as well as to provide enough protection, information, and control throughout the whole organization (Villegas, 1969; 7)

3.2.2 Objectives of Internal Control

According to Simkin, Rose, and Norman (2013), internal control was developed to acquire four objectives such as 1. Protection of assets, 2. Effective and efficient operations, 3. Reliable financial reporting. (Simkin et al., 2013; 237) Internal control on financial reporting includes preventive control, detective control, and corrective control. The duty of preventive control is to eliminate the chance of misstatement before recording the transactions and events in which detective controls are developed to find out the misstatements after recording in the financial statements and the aim of corrective control is to amend the misstatements which were founded by detective control (Younas & Kassim, 2019; 4). And adherence to the rule of law and regulations. If an organization can reach these four objectives which means that the organization is running in a fair, transparent, and accountable manner to defend the interest of its stakeholders. In 1992 a framework was extensively exercised by management in order to arrange and assess the company's ruling structure which is known as a Committee of Sponsoring Organizations of the Treadway Commission (COSO) framework. This framework was used to ameliorate the quality standards of financial reporting through business ethics, useful internal control, and corporate governance (Simkin et al., 2013; 237).

3.2.3 Components of Internal Control

COSO framework is regarded as a major development specifically in the area of business as it provides guidelines and principles to the management and other parties to realize the process of business functions as well as it supports management to evaluate various actions of an organization.

According to COSO, there are five components of internal controls that are raised from the way business is run and are connected with the management process. These components are 1. Control environment 2. Risk assessment 3. Control activities 4. Information and communication and 5. Monitoring. COSO also stated that:

*"There is synergy and linkage among these components, forming an integrated system that reacts dynamically to changing conditions. The internal control system is intertwined with the entity's operating activities and exists for fundamental business reasons. Internal control is most effective when controls are built into the entity's infrastructure and are a part of the essence of the enterprise. "Built-in" controls support quality and empowerment initiatives, avoid unnecessary costs and enable quick response to changing conditions" (*IFAC, 2006; 3).

3.2.3.1 Control Environment:

The control environment determines the voice of the company which affects people's control cognition. The control environment is the base of all other elements of internal control which provide discipline and structure (Gelinas et al., 2015; 232&233). Some central factors are included in the control environment. The first and the most important factor is management's attitude, integrity, and ethical principle that guide the organization, it also covers attention and direction which are provided by the board of director, commitment to competence, management's philosophy and operating style, policy, and procedure which management acquire to assign responsibility and authority across the organization, design of the organizational structure (Wakida, 2015; 3). The control environment aims to confirm that internal control has been conducted throughout the organization especially to those who contain integrity and ethical values of the organization. And to perform that, it needs to implement internal control by setting up-regulation in the organization because rules and regulations work as a principle of direction for each component of the organization which helps to manage the organization rightly. For financial reporting, the control environment assure that the reporting has been done most appropriately to generate quality financial statements (Ramdany, 2015; 146).

3.2.3.2 Risk Assessment:

Risk is involved with every step and function of an organization. It is not possible to find the exact solution for each risk or threat but necessary steps can be taken to avoid potential damage from the risk or to reduce the amount of risk. According to Simkin et al., (2013), it is not rational to establish controls for each potential risk or threat but through risk assessment, the risk of an organization can be identified and the potential cost and causes of the risk can be analyzed. In this case, only those controls can be implemented whose benefits exceed its cost. It is commonly known that the more liquid an asset, the greater the risk of its misuse. Healthy control is essential to reduce this risk. In this condition, COSO wants an organization to use a cost-benefit analysis method, through which an organization can calculate whether the implementation or operation cost of particular control processes are useful enough to invest the money or not through assessing its cost and benefits. If the benefits of controls exceed its costs then those controls can be implemented (Simkin et al., 2013; 237). Risk assessment aims to mark out and analyze the potential risk to the acquisition of organization's goals and to construct an initial method that will invent how the risks should be handled (Shahabuddin et al., 2011; 58)

3.2.3.3 Control Activities:

Control activities refer to those actions which are done by top-level management or other parties to ensure that necessary actions have been taken to mitigate the risk to achieve the organization's goals. These actions are carried out at all stages in the organization (Anderson et al., 2017; 339). Control activities can be classified into two classes. The first one is physical controls and the second one is IT controls. Physical control activities comprise:

- Authorization assures that transactions which have been occurred in the organization are valid and irrefutable.
- Separation of duties to impede fraud and error
- Observation to ensure that segregation of duties have been performed properly

- Accessibility control to confirm that only permitted people will have the right and ability to access the organization's assets and information
- Verification at large means the capability of monitoring for the second time to ensure that all the events and transactions that have taken place in the organization are accurate and free of error

And IT controls are the process which commits the assurance of secure information as well as assist to reduce risk related to the use of technology. IT controls are necessary to safeguard information assets, to keep the company competitive, and to maintain expenses during IT project implementation, etc. (Richardson et al., 2018; 283).

3.2.3.4 Information and Communication:

Information should be reliable to its users and it must maintain communication with those who need it. For instance, management must communicate with their employees about their duties and responsibilities and employees must acquire that right to warn management about the possible problems of the organization. The information must be communicated both within the organization and outside parties.

Information is one of the most demanded elements for any organization to perform internal control duties to backing the accomplishment of its objectives. Management acquires or creates and uses pertinent and quality information from both exterior and interior sources to boost the operation of other elements of internal control. Communication is a continuous, repetitive process that delivers, share and gain essential information. Internal communication is a way, through which information flows throughout the organization. It provides information to all staff from upper management that controls duties must be taken seriously. External control does two things. It delivers information to exterior parties by their needs and expectations at the same time it maintains inbound communication of pertinent external information (COSO, 2013).

3.2.3.5 Monitoring:

Monitoring is the review of an organization's activities and transactions to assess the standards of the performance which determine whether the controls are effective enough or not. In another word, we can say that it's a process of evaluation which ensure that all the elements of internal control are existed and functioning. It is also important for management to monitor those previously recognized problems to assure that they are amended. According to Arens et al., (2012), Monitoring refers to those actions which evaluate the quality of internal control through upper-level management and determine that controls have been carried out by the plan. It also determines that the information which has come from both internal and external sources have been assessed properly such as, internal audit reports, reports by regulators, feedback by operating staff, complaints from consumers, etc. (Arens et al., 2012; 301).

Now it is worth mentioning that internal control was originated as an accounting term but with the enhancement of the economy and businesses, internal control has extended its activities from a system of detection of fraud and error to a system of management procedure to acquire organization's objectives

3.3 CONCEPT OF ACCOUNTING INFORMATION SYSTEM

Today's world is the world of information. We are grateful to information technology, due to its evaluation, a dramatic change has occurred in the different fields of business. An accounting information system is one of the blessings of it. Before getting in touch with information technology, businesses faced various problems and obstacles. According to Kharuddin et al., (2010), Before the advent of computerized AIS, traditional accounting methods were used in the organization in which people used to record their data, transaction manually which brought many problems to business activities and organizational performance such as wrong data entry, inadequacy in task performance due to large amount of paperwork, etc. (Kharuddin et al., 2010; 28). Manual accounting system were not a fast way of data processing and there were many mistakes, faults were involved with this process (Dalclci & Taniş, 2004; 23). One of the major disadvantages of a manual accounting system is that it consumes a huge

amount of time (Pramuka & Pinasti, 2020;142). As a solution to these problems as well as to make organizational work easier, a groundbreaking approach was developed which is known as a computerized accounting information system. According to Aziz (2003), with the help of information technology, a tiresome traditional bookkeeping system has been removed as a result of the implementation of AIS (Aziz, 2003; 7866) and this system was developed to eliminate any kind of howler as the calculation is performed by the machine.

An accounting information system is the sum of three words which are accounting, information, and system. According to Hamid et al., (2015), accounting is a way of documenting all economic events that have taken place in an organization (Hamid et al., 2015; 28) which report to partners or interested parties involved in an institution as well as provide information about a financial situation and performance of an organization in a particular time (Vokshi & Krasniqi, 2017; 325). Information refers to those data that has meaning, according to Rainer and Prince (2016) when data become meaningful and understandable to its users, they turn into information (Rainer & Prince, 2016;10) and the system is composed of one or more interdependent component which communicates or interact each other to achieve a specific goal (Gelinas et al., 2012;13).

So, AIS refers to a system that is the sum of people and machinery, which was developed to turn data into useful information to provide effective information to the decision-makers (Bodnar & Hopwood,1995;1). There are five fundamental functions of AIS, such as data gathering, data processing, database management, and information creation (Wibison & Setyohadi, 2017; 137). AIS is also a part of entire information system (Sacer & Oluic, 2013; 117) which is considered as a tool for data collection, analyzing and decision making. It also works as a means of accountability to the lower-level employees. At the same time, to facilitate accountability of those employees, it assists them to record all events and transactions that occur in an organization (Marina et al., 2019; 555).

Meanwhile, according to Leslie et al., (2017), AIS is a method of collecting data, recording them and for processing the recorded data, they are classified, summarized

and consolidated, and finally provide to the users in a form of a report (Leslie et al., 2017; 24).

An accounting information system is a computer-based information system that enhances an organization's control by ensuring the quality of accounting information and improve collaboration within the organization by providing necessary information to the required ultimate users. At the same time, it backs up an organization for planning, monitoring, and analysis activities (Teru et al., 2017; 53)

According to the American institute of certified public accountants in 1966, cited in Sajady et al., (2008), "Accounting actually is information system and if we be more precise, accounting is the practice of general theories of information in the field of effective economic activities and consist of a major part of the information which is presented in the quantitative form".

3.3.1 Subsystem of AIS

According to Hall (2016), there are three subsystems of AIS which are the Transaction processing system (TPS), General ledger (GL)/Financial Reporting System (FRS), and Management reporting system (MRS).

3.3.1.1 The Transaction Processing System (TPS):

TPS is considered a fundamental part of IS. The responsibility of TPS is to turn an organization's economic events into a financial transaction, then recorded them into accounting such as in journals, ledgers and finally provide that financial information manage company's operational activities (Hall, 2016; 7&8). TPS basically conducts its activities in four cycles such as revenue cycle, expenditure circle, and production circle, and finance circle. Revenue cycle: involves selling goods and services to other organizations and receiving cash. Expenditure cycle: involves buying goods and services from other organizations and settling the related payment. Production cycle: related to convert raw materials and labor into useful goods and services and Finance cycle: deal with the activities that provide funds for operating business activities (Bodnar & Hopwood, 1995; 6).

3.3.1.2 General Ledger/Financial Reporting System:

In this system, transactions are processed by the general ledger so that they can prepare reports that summarize the results of organizational activities. The basic activities of this system are to update general ledger account, prepare financial statements and produce managerial reports or other reports demanded by law (Hall, 2016; 8&9).

3.3.1.3 Management Reporting System:

MRS which buttress managers delivering all sorts of internal financial information which are needed to run a business as well as making a decision. Reports that are provided by MRS are known as discretionary reports due to organizational independence on making reports such as budgets, variance reports, cost-volume-profit analysis, etc. (Hall, 2016; 8&9).

3.3.2 Elements of Accounting Information System (AIS)

There are six elements that are needed to establish a strong AIS. The first and most important component of AIS is the person who conducts the system. The second one is procedures and instruction which are used as a tool of collection, processing, controlling, and storing data. The third one is data. All functions of AIS are centered on data. So, data must be related to the company and its business activities. The fourth one is software which plays a significant role in gathering, processing, and delivering data. The fifth one is the tangible technological infrastructure that supports running AIS and carry out its task. Sixth and the last one is internal control and security measure which assist to maintain and defense data.

As AIS is the sum of person, practice, and information technology which perform the following responsibilities for an organization:

- To gather and keep data related to business activities and transactions which make the organization able to evaluate the events that happened in the past

- To turn data into information that facilitates the administration's decision-making along with planning, monitoring, and assessing organizational activities.
- To establish a strong control system to protect the organization's assets and financial data. This control system must ensure that assets are in a safe position and data are available whenever it needs (Romney et al., 2012; 16).

3.3.3 Users of Accounting Information System

Users of AIS can be categorized into two major groups. Internal users and external users.

3.3.3.1 Internal Users:

Managers are upper-level management who work inside the company are considered an internal user. These are people who plan, organize and operate the organization. It can be a marketing manager, finance director, production supervisors, etc. Based on their position, each manager has to answer the important question on the behalf of an organization, such as the finance manager has to answer whether the existing cash is good enough to pay dividends to the shareholders or not. Marketing managers have to reply what prices to charge to increase the company's net income etc. (Kimmel et al., 2013; 6).

3.3.3.2 External Users:

Contrariwise, external users refer to those individuals who don't participate to run or manage the organization but are interested in the financial information of the company, and that financial information is presented to them in the form of an annual financial statement (Jezovita, 2015; 63). Examples of external users are suppliers, customers, investors, tax authorities etc.

3.3.4 Principles and Dimension of Accounting Information System

AIS belongs to three basic principles that are narrated by Weygandt et al., in 2012, The first one is cost-effectiveness which means, the advantages of AIS have to exceed the

cost of using it. The second one is useful-output which means, the information that will be provided by AIS, must be apprehensible, pertinent, dependable, timely, and appropriate and the last one is flexibility. AIS should be flexible in such a way that can be changed over time (Weygandt et al., 2012; 316&317). According to Mitrovic (2016), Flexibility is one of the most remarkable features of AIS which is very urgent to exist in every organization. As the organizational business environment is always changeable, to adapt to this variable circumstance and to conduct organizational activities, the flexible nature of AIS plays a key role in providing timely information to the needers (Mitrovic, 2016; 408). According to Thapayom (2015), there are four dimensions of an excellent AIS. The first one is entire information cooperation which means to adjust, communicate and transfer information within the organization so that management can work together to reach a specific goal. The second one is, compatible information system linkage, that means AIS will be able to maintain compatible compact with equipment and other existing information system in the entities with supple and accurately. The third one is, properly business information explanation which refers to an illustration and converts data into useful accounting information to assists management in decision making and the last one is, understandable accounting information presentation which means to present data in a way that include all business operations and increase the understandability of relevant users (Thapayom, 2015; 310&311).

3.3.5 Characteristics of Accounting Information System

A well-organized internal control system is required to maintain the qualitative characteristic of AIS as it ensures operational objective and performance of the business by influencing management activities of the business organization (Hla & Teru, 2015; 976)**.**

AIS provides information to numerous numbers of users. All types of decisions of an organization are made based on the information that is provided by AIS. The information that AIS delivers must be of high standards because undoubtedly it can say that the quality of decisions mainly depends on the quality of information. So, to provide this high-quality information, AIS must have some features.

According to Kieso et al., (2016), AIS is naturally inherited with many features. Relevance and reliability are the two main features that are very vital for making a decision. In the absence of any of them, the information will not be fruitful. That's why it is crucial to hold these two characteristics in order to consider information as an ideal information. There are other characteristics of AIS that are supplementary to the primary peculiarities such as comparability, verifiability, timeliness, and understandability which fall into the categories of enhancing the quality of AIS (Kieso et al., 2016; 42).

3.3.5.1 Relevance:

Information, to be relevant; it must enable users to make difference in their decisions. To be able to make this difference, financial information must have predictive value, feedback value, and timeliness. Predictive value helps decision-makers to know or anticipate about future where feedback value assists decision-makers to assure and reform the previous expectancy. Another important element for information to be relevant is timeliness because if certain information is not ready or available at a specific time to the users, then that information is considered worthless (Obaidat, 2007; 27) According to Clarke (2002), when an information impact on the financial decision of decision-makers through assessing present, past and incoming events, then that information is considered as relevant information (Clarke, 2002; 12&13).

3.3.5.2 Reliability:

Reliability is another major feature of AIS that builds the trust of users to rely on the information (Ahmed, 2020; 7). According to Agung (2015), reliable and valid financial accounting information improves decision-making as well as maintains a healthy relationship between employees of an organization through enhancing transparency which removes doubt along with increase financial and nonfinancial performances (Agung, 2015; 954). To acquire reliability features, Information must be unbiased and free of error. For achieving this reliable qualification, financial information must accurately and exactly represent all financial transactions and events that have been taken place in the business in which nothing more or less will be shown. There must be completeness within financial information because if there is any deficiency in

information, then it loses its acceptability and becomes unreliable to users (Alawaqleh & Al-Sohaimat, 2017; 200)

3.3.5.3 Comparability:

The comparability feature of AIS is used as a direction of the next step, as it assists in analyzing previous transactions or events with the current performance of the organization as well as it also supports bringing competitive advantage over competitors. According to Floştolu (2019), AIS's comparability nature will be more efficient and effective when the information will be compared with the information of the same organization or other organizations at different periods of time (Floştolu, 2019; 48).

3.3.5.4 Verifiability:

The verifiability characteristic of AIS enhances business transparency and integrity. According to Lateckova et al., (2017), it is urgent for accounting information to be verifiable as it conveys the real economic condition of an organization. An accounting record to be verifiable must contain, 1. Directly proved facts, 2. Substantiate the fact indirectly through another verifiable accounting records (Lateckova et al., 2017; 6) According to Financial Accounting Standards Board (1980), verifiability quality of AIS is proven only when two independent individuals reach to similar result by using the same method or technique (FASB, 1980; 6). For example, suppose a company owns equipment worth 1000$. If purchase price, salvage value, depreciation method, and useful life is given to an independent accountant and if he becomes able to produce the same result the company did, then the information is regarded as verifiable information but if the accountant cannot figure out the similar result that the company did, then it would consider as unverifiable information.

3.3.5.5 Timeliness:

The timeliness quality of AIS has become highly appreciated by decision-makers due to its huge impact on decision-making. Timeliness refers to the fact that information is available or present to the decision-makers at the exact time of decision making or whenever it needs. Emphasizing timeliness, William Shakespeare told that "Better

three hours too soon, than one minute too late". According to Kieso et al., (2016), Timeliness means having information present to the users before it misses out on its ability to impact decisions. If information is not available to the decision-makers on time then the information loses its effectiveness but if the information is provided to the users earlier or timely manner then it becomes useful to make more efficient decisions (Kieso et al., 2016; 47).

3.3.5.6 Understandability:

Understandability refers to easily comprehend any information. In today's multinational business environment, the convenience of information will enhance if the information is simple and understandable to users. According to Zeudong (w. date), Information must be categorized, differentiated, and exhibited to the decision-makers in a very obvious and brief way in order to increase understandability (Zeudong, p-16). Language and subjective knowledge play an essential role in making information easy to understand to the users, for example, if your mother tongue is Turkish but you work in an organization in which you have to deal with everything in English. You have been graduated from Turkish literature but you are working in the engineering sector. In this case, if you have poor skill in English as well as little idea about the working field then it will be difficult for you to analyze the long annual business reports that are provided by the business due to a lack of both language and subjective competence. Even analysis can be wrong which may affect negatively making decisions. According to Gelinas et al., (2012), The understandability feature of AIS play a significant role in realizing the importance of any information and applying it properly through decision making (Gelinas et al., 2012; 13). Any information that is not understandable to users will be considered null and void.

3.4 HOW ACCOUNTING INFORMATION SYSTEM ADD VALUE TO AN ORGANIZATION?

Thus, the emergence of AIS has facilitated business activities and its performance. According to Romney et al., (2012), AIS has contributed to the business organization by adding values in a various way such as, enhancing product quality and diminishing the costs of product and services: AIS control the system which help controller to take

immediate action if performance goes beyond of acceptable quality of the process. This is how, these systems defend product quality, lessen the dissipation of materials and minimize the cost from reprocessing. Incrementing productivity: A successful production process depends on continuous, appropriate, and real information about raw materials and their place, a well-developed AIS performs those activities perfectly. Ameliorating decision making: by providing timely correct information to the decision-makers. Sharing knowledge and expertise: which help management to develop their activities quickly and provide competitive advantage (Romney et al., 2012; 16&17). Overall, we can say that the implementation of AIS raises reliability, accuracy, timeliness of information which bring myriad of amenities to an organization such as, improve decision making, internal controls, and financial information as well as generate financial reporting and statement in a standardized layout and timely manner to the users, enhance their goods and services quality, decrease operational cost, ameliorate work competencies, etc.

3.5 THE SIGNIFICANCE OF AIS IN DECISION-MAKING

With the passes of time, the area of business has been extended. With the extension of the business, the level of transactions and other functions of business has also been expanded which has transferred business into a complex entity. According to Shuhidan et al., (2015), As a guide, in this complex and dynamic business circumstance, information technology is used to prop AIS so that it can generate useful information for decision-makers (Shuhidan et al., 2015; 889). AIS can be compared with the oxygen of the human body. Without oxygen, it's impossible for the human being to survive. Similarly, in this modern era, it's unethical to imagine an organization, taking their decision without implementing AIS. According to Hanifi & Taleei (2015), The improvement of information technology has turned the accounting system into a system of information that is not restricted to data and financial information but it contains information of descriptive and quantitative nature, valuable to users (moneylenders, suppliers, creditors, government, the general public, etc.) as well as

useful to make an effective decision along with accelerating organizational performance (Hanifi & Taleei, 2015; 686)

AIS is indispensable, as a provider of information required by all the departments involved in an organization to make their decisions. According to Buljubasic & Ilgun (2015), A business information system can be classified into three subsystems such as executive subsystem, information subsystem, and management subsystem. Here, the information subsystem plays a friendly relationship between the executive and management subsystem by providing timely information to them to make a decision. Strategic management requires various and summarized information so that they can draw future-oriented decisions. Along with, Tactical management needs more detailed information to compare to strategic management to manage their activities within a short period. Operational managements demand analytical data for information that is formed on a daily basis. Overall, to run business operations as well as to make all types of business decisions, a company's management relies on an accounting information system (Buljubasic & Ilgun, 2015; 464&465). According to Lacob and Karim cited by Srivastava & Lognathan (2016), no one knows in which accounting in its limited sense has begun. But everybody will be assenting that accounting which is not useful, in any way, should be abolished. All levels of business organization, accounting information assist management such as it may be officer, sub-officer, lecturer, creditors, potential workers, etc. Each of the accounting data users maintains their connection with the organization on the basis of accounting reports. An economic function can be managed properly if the decision, implementation, and control are carrying out on the basis of flawless and complete information. In this case, we require accounting management to deliver essential information to the decision-makers (Srivastava & Lognathan, 2016; 173)

AIS occupies a huge place in the data supply of an economic unit. Most of the economic decisions are made based on the information provided by AIS. According to Hybe, cited by Lucia (2013), the amount of information that is circulated in an economic unit, of which on average 80% are economic data and 47% accounting information (Lucia, 2013; 66). This statistic provides us a crystal-clear picture of the significance of accounting information for decision-making.

In this competitive world, business takes a various decision based on the information provided by AIS. These decisions involve the introduction of new product decisions in the market, investment decisions, economic decisions, and many other decisions. The importance of AIS in the above-mentioned decisions is described below:

The main purpose of any financial organization is to make a profit. To achieve this profit, an organization has to supply products according to the needs and demands of consumers, but the most difficult and risky task of the organization is to make the decision for introducing a new product to the market. In this case, AIS provides information and other ingredients that are required for the decision to be made. According to Wittayapoom (2014), new product development is done through five stages such as opportunity identification, idea generation, concept assessing, development (sum of technical design and marketing planning) and the last one is product launching. Accounting information and accounting audits play an essential role in facilitating the work of each stage of the new product development as well as bringing effective results (Wittayapoom, 2014; 308).

The role of AIS in making an investment decision is undeniable. The financial conditions of an organization are presented to investors by AIS through providing financial information. Based on the financial information provided by AIS, Investors decide whether their investment will be profitable or not. At the same time, they can decide whether to increment or decrement their investment in the future (Vokshi & Krasniqi, 2017; 327). Transparency and flawless information are the precondition to encourage investors to conduct business activities through motivating investment decision in a company (Mohammadi et al., 2012; 186) Accounting information is a good choice for investment decision as it helps to evaluate the possible benefits and risk which will occur in a specific alternative investment decision (Djuwito, 2010; 177)

Financial information is used to make the economic decision as it concentrates on real events, allow decision-makers to learn from past events, and use it as a guide for the future. It also assists inside and outside users to get outcomes in the field of budgeting, inquiring, explaining, and communicating (Ikram & Krit, 2019; 462)To make it certain that the decisions that has taken by the business is based on the healthy

foundation and true results of past events, AIS must own some qualities when it gathers data, process and store them for further use such as data must be from reliable sources, relevant to business, must be available whenever it needs to make a decision, etc.(Akinrinola et al., 2019; 254).

3.6 THE ROLE OF AIS IN DECISION-MAKING OF AN ORGANIZATION

To take a decision without information is like throw an arrow in the air because both bring no fruitful outcomes. That's why the significance of information during decision making is unavoidable but for information to be significant, it must have an effect on decision making. According to Bodnar and Hopwood (1995), the values of any information depending on its impact on decisions. If any information that doesn't influence a decision, possess no value. If information wants to enhance its quality in order to influence decision making, it must acquire accuracy, timeliness, responses, completeness, and relevance qualities (Bodnar & Hopwood, 1995; 399). Through acquiring these qualities, the role of information specially the role of accounting information on business decision making has become remarkable. According to Al-Rashdan et al., (2020), AIS helps an organization to make a decision by improving data quality through developing system quality and service quality which assists users to take right decisions at the right time as well as achieving organizational goals (Al-Rashdan et al., 2020; 60). An AIS helps users to make a business decision by:

- providing solid data so that decision-makers can predict the outcome of the decision
- presenting information in a continuous and uniform manner to the users so that they can make a decision in a comfortable way.
- recognizing, formatting, and quantifying important connections from the past so that it can predict future reports through applying new mathematical processes.
- assembling financial data with the data of primary activities so that it can maintain expenses and make comfort in decision making
- conquering entire niceties and intimidation of the company.

- providing information until a specific level and meeting the dimension of details to a higher level. In this way, it minimizes the essential time to study information reports.
- utilizing organization's staffs and equipment to identify velocity and exactness with the least cost
- assuring flexibility to accustom with changed (Cornia & Miculescu, 2012; 698).

According to Toluyemi (1999), AIS plays a significant role in making an effective and efficient decision for an organization through planning, analyzing, and controlling. Selecting the best among many alternatives, analyzing past events, deciding what to do in the future based on the current performance of the organization, are the tasks of planning. The duty of controlling is to assist in implementing the organization's plan into reality and to alert the organization if it strays from plan and Analysis informs organization about all types of threats, vulnerabilities and mark out all sort of benefits beyond plan (Toluyemi, 1999; 212). Decision-making is a complicated and long process that starts with problem identification and ends by implementing the solution to the identified problem. The role of AIS in completing those steps that need to be taken from problem identification to implementation is noteworthy. For example, for taking a decision, it provides users appropriate decision-making models, analytical equipment for analysis such as query language collect pertinent data to assists decision-makers, graphical interfaces support users to explain the decision-making models results, assessing them and picking up the best action among many alternatives. There are also many ways, through which AIS boost decision making such as; by identifying circumstance that needs management action

- encouraging management to investigate long inconsistency report of an organization as well as helps in amending if necessary.
- removing ambiguity along with help in selecting the best course of action among many alternatives
- delivering information to users whenever it needs
- examining sales data in order to find out those items that were bought together as well as using such information to promote the layout of commodities to inspire extra sales of connected items. (Romney et al., 2012; 17).

According to Siyanbola & Tunji (2012), when internal or external users of accounting information want to make a decision, generally they raise the following questions:

- How is the financial situation of the business?
- Whether there has been any gain or loss through business activities?
- How good the other divisions affiliated with the organization have performed?
- Which activities and goods have brought more profit to business?
- Which of the existing goods should be over-produced and which one should be paused?
- Whether to buy materials from the market or not? If not then how to produce that material?
- Is the production cost of business affordable or excessive?
- What is the influence of existing policies on business profit? Whether does it affect positively or not?
- In the light of previous experiences, how should be a business plan to ensure expected results in the future? (Siyanbola & Tunji, 2012; 31).

As a solution of the above questions, AIS plays a crucial and efficient role by providing information through displaying financial statements in the form of the annual report. As we know AIS presents assets, liabilities, expenses, and revenue of an organization to the decision-makers through financial statements. On the basis of this financial statement, both internal and external users of an organization can easily draw their decisions. According to Kimmel, Weygandt, and Kieso (2013), financial statements that help decision-makers to make decisions can be classified into four groups. The income statement, retained earnings statement, balance sheet, and statement of cash flow. The income statement shows users how effectively the business has functioned during the period. It reports all revenue and expenses that have occurred throughout the year. Retain earning statement exhibit how much of prior income was given to shareholders as a dividend and how much is left in the organization for future growth. Balance sheet shows the most important picture of financial statement, through this statement, decision-makers can know how much the company has owned as an assets and how much the

company owes as a liabilities and the last one is cash flow statement which enable decision makers to know, from where the organization has earned its cash and how did it spend (Kimmel et al., 2013; 11). Overall, we can conclude that all of the aforementioned financial statement are made to show financial performance and financial position of the company to the users, which are needed for making decision. AIS play a key role in facilitating the decision-making process through being a helper to prepare these financial statements.

3.7 HOW AIS MAINTAIN RELATIONSHIP WITH DECISION-MAKING TO IMPROVE COMPANY'S PERFORMANCE?

AIS is not limited to keep a good relationship with decision-making. It has also extended its relationship with the overall performance of an organization by maintaining a positive relationship with decision-making. There are many ways AIS keeps connection with decision-making to enhance a firm's performance. As it is known that AIS is considered as a unique tool that plays a key role in improving the overall decisions of an organization by providing valuable information to senior executives as well as managers so that they can contribute to bringing better performance on the behalf of the company. Based on the research that was done by Akanfe & Tajudeen (2014), where they found that AIS improves a firm's executive's performances, because through applying a felicitous AIS enable an organization to provide an accurate and precise financial report which lead to making a better and excellent financial decision for the organization (Akanfe & Tajudeen, 2014;11). As we know that a better system leads to a better decision and a better decision brings better performances. Another research was developed by Esparza-Aguilar et al., (2016), where they mentioned that The practice of accounting information system brings a competitive advantage for the company through the upliftment of vendee satisfaction, market demand as well as company's prestige in the global market economy (Esparza-Aguilar et al., 2016; 1115) because only through AIS, management departments of an organization get all the information about their competitors' products which make them able to make appropriate decisions about the improvement of their product

quality as well as help them to take a competitive advantage over competitors by supplying high standards product according to consumers demand. Based on the Sori's analysis on the use of accounting information in ZBMS company in 2009 where he found that AIS adds value to accountants by minimizing errors and inaccuracy through constructing, forming data quality (Sori, 2009; 41) because if the information is relevant and accurate, it makes an important connection in making the right decision and at the same time reduce misunderstanding among employees working in the organization and strengthens the bonds between them. So, the combination of healthy information and the right decision uplifts the company's performance.

But it's not fair to assume that using AIS and just making a decision will improve the company's performance. To improve a company's performance through using AIS, AIS users must be high skillful regarding the system and the company must be able to bear the cost of using it. Jawabreh & Alrabei developed research in 2012, in that research they found that due to the lack of management qualification and high placing and applying cost of AIS, Sometimes authorities avoid using AIS in their organization (Jawabreh & Alrabei, 2012;185). Because it is logical to think that if business management doesn't have in-depth knowledge about the system that they used to conduct the business, then they will never be able to make a better decision which will hinder a business from achieving the expected results as well as become an obstacle to improve firm's performance in the same way if the company becomes financially weak, then it will be hard for them to bear the setting up cost of AIS which will make their performance much poorer.

But in this advanced, modern, and competitive technological epoch, the existence of any financial entity relies on their incessant and non-stop progress of its performance (Salehi et al., 2010; 186) and adopting a modern information system. If any business organization doesn't be aware of the magical advantages of AIS and doesn't utilize its benefits properly, then it will fail to improve its performance. Zhai & Wang in 2016, enunciated as a result of their investigation that there is a positive connection between AIS and the enhancement of operating income of an organization. High standards AIS facilitate administration to maximize their capital investment decision as well as draw great attention to the investor (Zhai & Wang, 2016; 265). But the failure and

mismanagement of AIS results in reducing productivity due to bad technical matter and ill maintain environments. Besides, with the precise and wise use of AIS, the organization will be benefited by reducing operational costs and will be able to make the transaction easier among their clients. The use of an accounting information system aids the organization to prepare its financial report on time conscientiously and appropriately. So, all financial organization must advance their information technology to improve the efficiency of their service, keeping better customer relationships, maintaining all the cost as well as overall performance (Dandago & Rufai, 2014; 668&669).

3.8 THE RELATIONSHIP BETWEEN ACCOUNTING INFORMATION SYSTEM AND DECISION-MAKING

Making a decision is one of the fundamental parts of management activities. To make a decision, managements use various tools. AIS is one of them which congregate vital information to assist decision-makers in the process of decision making.

Information is required in every area of human thought and actions. It is very important to achieve both personal and institutional goals. In this case, if the management of an organization wants to be successful, they need detailed information about the materials and environment of the business which will help organization's management to revise their goals. Its philosophical observation revises an organization's principles and strategies which are vital for business survival and growth. AIS maintains an important position as a link between decision-makers and decisions when it comes to completing these tasks and making a decision in the organization. According to Danjuma (2015), the higher-level authorities of an organization use AIS to find out the results of their specific course of action through which they can control any mistake in their work and set up their plan. An organization's board of directors always use accounting report and the information contains in the reports help managers at all the levels to make their business decisions. Accounting information assists authorities to compare their plan with the performance and for that, AIS identifies variance analysis through which management can find out the difference between the set plan and the actual performance of the company. If there is any difference between actual performance

with the plan, AIS helps managements to investigate the causes.it is also essential for management to present the details of standards and true costing of every product that has been produced. In this condition, if management can take full advantage of the standards costing system, then they will able to make immediate decisions to properly investigate and correct the adverse variances (Danjuma, 2015; 35&36).

Based on the research conducted by Daniels and Beeler (2001), in which they mentioned that AIS has appeared to us as a decision-making aid that supports decisions involving pricing, cost allocation, estimation, profitability evaluation, etc. (Daniels & Beeler, 2001; 14). Another research was done by Akeem et al., (2019) where they found a significant relationship between accounting information and decision making. In that study, they stated that accounting information should be used in decisions such as preferment, transfer, and trimmings of employees in an organization as a wrong decision affects not only the human research department but the whole departments involved in the organization. They also expressed that whenever a manufacturing company encounters a problem, it is necessary to make a quick decision especially for the marketing department as selling and marketing is the most important job of the marketing department. In this case, accounting information facilitates marketing decision as well as favor company capturing a myriad number of customers in the market. Not only this, but it also plays a crucial role to make both strategic and production decisions in the company, even it shows the direction how to implement the decisions into reality (Akeem et al., 2019; 154). According to Socea (2012), AIS helps managers to know about all the events that happened in the past as well as notify them about the current overall position of the company. Through this, management can make a comparative analysis by highlighting the events that took place in the last year and the present state of the organization. Based on this, they can calculate their organizational exact performance and at the same time, they can draw better decisions (such as what type of strategy to follow in the next to improve performance, whether to add a new product or not, etc.) to perform well in the future. AIS also informs all the stakeholders involved in the company about the current financial condition of the company by showing the overview of the company which helps AIS's users of the company especially the investors to decide whether to invest more or less. For

example, if they notice the poor performance of the company in the overview, then they will decide to reduce the investment but if they see that the company is performing well then, they will decide to increase the investment amounts. As AIS displays the overall scenario of the company, through which managers can decide through estimation what steps should be taken in the future, if any wrong decision is taken in the past then it helps to convert that wrong decision into a better decision (Socea, 2012; 52).

CHAPTER FOUR

4.1 DATA ANALYSIS AND RESEARCH FINDING

4.1.1 Introduction

This chapter will show the findings of data analysis that have attained from questionnaires collected from the respondents. The main aim of the research is to explore the correlation between the effective accounting information system as an independent variable and decision-making as a dependent variable.

The statistical analysis of the Pearson correlation was used to identify the relationship between independent variable and dependent variable. Additionally, the reliability test was used. Overall, the chapter divided into seven parts which include overview of data collection, the profile of respondents, validity and reliability analysis, descriptive analysis, correlation analysis, regression analysis, and conclusion.

Table 4.1 Response Rate.

S. No.	**Questionnaires**	**Total**	**Response (%)**
1	Questionnaires distributed	100	100%
2	Collected questionnaires	70	70%
3	Usable questionnaires	57	57%
4	Discarded questionnaires	13	13%
5	Uncollected questionnaires	30	30%

Table 4.1 illustrates us a total of 100 questionnaires were distributed and 70 questionnaires were collected. However, among the collected questionnaires, there were 13 questionnaires that had significantly missing values. So, as a result, the analysis was conducted among 57 participant manufacturing and service companies.

4.1.2 Participants' Profile

Table 4.2 Distribution of Participant by Educational Qualification.

S. No.	Educational Level	Frequency	Percent (%)	Cumulative Percent (%)
1	Diploma	16	28.07	28.07
2	BA Degree	23	40.35	69.05
6	MA Degree	16	28.07	96.5
7	Other	2	3.5	100
	Total	57	100.0	

Table 4.2 illustrates that the majority of participant 40.35% which means 23 respondents out of 57 have completed their Bachelor degree and 16 respondents which is 28.07% have completed their Diploma. From the respondents who have completed their Master's degree is also 28.07%. And 2 respondents have completed other degrees which has not been specified.

Table 4.3 Distribution of Participant by Legal Status of the Company.

S. No.	Legal Status of the Firm	Frequency	Percent (%)	Cumulative Percent (%)
1	Individual	39	68.421	68.421
2	Business Entity	18	31.578	100
3	**Total**	57	100	

The above **Table 4.3** displays that the majority of the firms were individuals which is 39 out of 57 with 68.42% and it was followed by 18 firms which were Business Entity with 31.57%.

Table 4.4 Distribution of Participant by Firm Industry.

S. No.	Industry	Frequency	Percent (%)	Cumulative Percent (%)
1	Textile.	05	8.771	8.771
2	Food.	11	19.298	28.069
5	Others.	41	71.929	100
6	**Total**	57	100	

From the survey findings, **Table 4.4** indicates that from Textile industry, the number of respondents is 5 which is 8.77%. From Food industry, the number of respondents is 11 which is 19.29%, and the majority of responses have come from other industries which is 41 with 71.92%. There is no any response has come from Plastic and Machine industry.

Table 4.5 Distribution of Participant by Job Title.

S. No.	Job Title	Frequency	Percent (%)	Cumulative Percent (%)
	General Manager	11	19.298	19.298
	Company Owner	26	45.614	64.912
	Accounting Department Manager	09	15.789	80.701
	Other Unit Manager	11	19.298	100
	Total	57	100	

The above **Table 4.5** shows that most of the respondents were Business owners which is 26 out of 57 with 45.61%. Also, it was followed by 11 respondents of General Managers with 19.29%. The number of respondents that have come from pure Accounting Department Managers were 9 which is 15.78% and the remaining respondents were from other departments managers that was 11 with 19.29%.

4.1.3 Validity and Reliability Analysis

Validity and Reliability are the two most crucial and fundamental weapon for the assessment of any measurement in any good research. According to Heale & Twycross (2015), Validity refers to the degree to which it indicates how accurately a conception has been measured in a quantitate study and Reliability refers to the condition in which research tool brings same outcomes if it is used in a similar circumstance on repeated occasion (Heale & Twycross, 2015; 66). So, in one word we can say that reliability is related to the consistency of the measurement and validity is related to the accuracy of the measurement.

According to Hinton et al., cited by Taherdoost in 2016, for any test to be reliable, there are four important points to be considered. If the coefficient values of reliability are above 0.90 then it is considered as an excellent reliability. If the coefficient values are between (0.70-0.90) then it is considered as high reliability. If the coefficient values are between (0.50-0.70) then it is considered as moderate reliability and If the coefficient values are below 0.50 then it is considered as a low or poor reliability (Taherdoost, 2016; 33).

However, in my study, I have used Cronbach's Alpha (α) method for Likert-Scale questions to determine the reliability.

Table 4.6 Validity and Reliability.

Variables	**No. of Items**	**Cronbach's Alpha**

Effective AIS	18	0.841
Organizational Decision-Making	19	0.769

As it has been displayed in the above **Table 4.6** is that the reliability coefficients values for the independent variable is 0.841, and the dependent variable is 0.769. According to social science research, the minimum level of reliability is supposed to be at least 70%. Therefore, both variables' scales can be considered as an accepted value and highly reliable.

The below **Table 4.7** illustrates the number of participants who have responded each of the question, here there are 57 participants who have responded positively and there are 0 participant who has responded negatively. Note to be taken that each of the participant has admitted that they have the practice of AIS in their organization which is very significant and bear a strong evidence that they are all aware of using AIS on organizational decision-making.

Table 4.7 Question and Response for Valid and Invalid Inputs.

Variable	**Valid**	**Invalid**
Do you have an Accounting Information System in your company?	57	0
AIS contributes to the reliability of financial reporting.	57	0
AIS enhances compliance with legal regulations and accounting principles and standards.	57	0
AIS should provide understandable financial information to managers.	57	0
AIS should provide timely reports to the business managements.	57	0
AIS is an indispensable tool for the enterprise to achieve its objectives.	57	0
AIS should include internal control procedures and tools to prevent errors and fraud that will contribute to improving the	57	0

quality of information and reporting.		
AIS contributes to increasing productivity and competitive advantage in the enterprise.	57	0
AIS enhances the effectiveness of decisions made in the organization.	57	0
AIS helps in making basic strategic decisions of the business such as corporate vision, growth strategy etc.	57	0
AIS aids in human resource management decisions such as HR policies, promotion, transfer & retrenchment	57	0
AIS supports in investment decisions such as capital raising, borrowing, liquidation, and dividend payments etc.	57	0
AIS assists in marketing decisions such as selling and marketing strategy, promotional policies and market research etc.	57	0
AIS provides support to the managements in making future decisions through budgeting tools	57	0
AIS provides up-to-date information to the management when they are making important decisions about business activities.	57	0
Appropriate information obtained from the AIS enables business decisions to be taken more quickly and accurately.	57	0
The effective operation of AIS ensure that both internal and external users (Managers, Investors, Creditors) accurately make their decisions.	57	0
AIS enhances management's ability to manage and control day to day activities.	57	0
AIS enhances the overall quality of the company's decisions.	57	0

4.1.4 Descriptive Analysis

The descriptive analysis part includes the percentage distribution, standard deviation and arithmetic mean for both independent and dependent variables that have attained which are given in the below Table:

Table 4.8 Percentage Distribution, Arithmetic Mean and Standard Deviation for Effective Accounting Information on Organizational Performances.

Statements (n=57)	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Mean**	**Standard Deviation**
	%	**%**	**%**	**%**	**%**		
AIS contributes to the reliability of financial reporting.	1.8	3.5	14.0	45.6	35.1	1.91	.892
AIS enhances compliance with legal regulations and accounting principles and standards.	-	3.5	10.5	61.4	24.6	1.93	.704
AIS should provide understandable financial information to managers.	-	-	5.3	56.1	38.6	1.65	.582
AIS should provide timely reports to the business managements.	-	-	5.3	56.1	38.6	1.67	.577
AIS is an indispensable tool for the enterprise to achieve its objectives.	-	7.0	34.6	47.4	21.1	2.18	.848
AIS should include internal control procedures and tools to prevent errors and fraud that will contribute to improving the quality of information and reporting.	-	3.5	10.5	40.4	45.6	1.72	.796
AIS contributes to increasing productivity and competitive advantage in the enterprise.	-	12.3	33.3	38.6	15.8	2.42	.905

The above **Table 4.8** was the analysis of 7 Likert-scale questions to calculate the participants view and their level of participation on "Effectiveness of Accounting Information System on Organizational Performances".

The participant's opinion on "**AIS contributes to the reliability of financial reporting**", there are 1.8% Strongly Disagree, 3.5% Disagree, 14% Neutral, 45.6% Agree and 35.1% Strongly Agree which mean 80.7 % of total respondents believe that

AIS have a huge contribution on the reliability of financial reporting where an Arithmetic Mean is 1.91 and Standard Deviation is 0.892. On the other side, the participant's opinion on "**AIS enhances compliance with statutory regulations, accounting principles and standards**," we can notice that there is 3.5% Disagree, 10.5% Neutral, 61.4% Agree and 24.6% Strongly Agree which indicate that 86% respondents have given positive response on the above statement where an Arithmetic Mean is 1.93 and Standard Deviation is 0.704.

The respondent's opinion on "**AIS should provide understandable financial information to the managers,**" there is not any respondent of Disagree, 5.3% Neutral, 56.1% Agree, 38.6% Strongly Agree that means 94.7% respondents have provided their consent on the above question in which an Arithmetic Mean is 1.65, Standard Deviation is 0.582. Observing the opinion on "**AIS should provide timely report to business managements,**" there is not any respondent of Disagree, 5.3% Neutral, 56.1% Agree, 38.6% Strongly Agree which shows that 94.7% are agreed on this statement where an Arithmetic Mean is 1.67, Standard Deviation of 0.577.

The respondent's opinion on "**AIS is an indispensable tool for the enterprise to achieve its objectives**," there is 7% Disagree, 34.6% Neutral, 47.4% Agree, 21.1 % Strongly Agree which reveal that 68.5% respondents have admitted that AIS an is an indispensable tool for the enterprise to achieve its objectives with an Arithmetic Mean of 2.18 and Standard Deviation of 0.848. Based on the opinion on "**AIS should include internal control procedures and tools to prevent errors and frauds that will contribute to improving the quality of information and reporting**," there is 3.5% Disagree, 10.5% Neutral, 40.4% Agree, 45.6% Strongly Agree that mean 86% participants have agreed with the above statements where there is an Arithmetic Mean that is 1.72 and Standard Deviation of 0.796.

Depending on the opinion on "**AIS contributes to increasing productivity and competitive advantage in the enterprise**," there is 12.3% Disagree, 33.3% Neutral, 38.6% Agree, 15.8% Strongly agree which mean 54.4% respondents have provided positive reply regarding AIS contribution on production and competitive advantage in which an Arithmetic Mean is 2.42 and Standard Deviation is 0.905.

Hitherwards, the average of Likert-type questions is reviewed, the average responses of the participants to the questions are between 1.65 and 2.42. Although, the percentages of participation in respondents are close to each other, the maximum participation rate is 94.7% for both "AIS should provide understandable financial information to the managers" and "AIS should provide timely report to business managements**,**" and the lowest participation rate is 54.4% for "AIS contributes to increasing productivity and competitive advantage in the enterprise."

So, based on the average mean and average standard deviation of each question related to the effectiveness of AIS's contribution on organizational performance, we can conclude that there is a significant impact of AIS on Organizational Performance.

Table 4.9 Percentage Distribution, Arithmetic Mean and Standard Deviation for the Effectiveness of Accounting Information System on Organizational Decision-Making.

Statements (n=57)	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**	**Mean**	**Standard Deviation**
	%	**%**	**%**	**%**	**%**		
AIS enhances the effectiveness of decisions made in the organization.	-	7.0	17.5	56.1	19.3	2.12	.803
AIS helps in making basic strategic decisions of the business such as corporate vision, growth strategy etc.	-	8.8	15.8	64.9	10.5	2.23	.756
AIS aids in human resource management decisions such as HR policies, promotion, transfer & retrenchment.	1.8	15.8	24.6	43.9	14.0	2.47	.984
AIS supports in investment decisions such as capital raising, borrowing, liquidation, and dividend payments etc.	-	1.8	21.1	56.1	21.1	2.04	.706
AIS assists in marketing decisions such as selling and marketing strategy, promotional policies and market research etc.	1.8	10.5	15.8	54.4	17.5	2.25	.931
AIS provides support to the managements in making future decisions through budgeting tools.	-	1.8	19.3	57.9	21.1	2.02	.694
AIS provides up-to-date information to the management when they are making	1.8	1.8	7.0	71.9	17.5	1.98	.694

important decisions about business activities.							
Appropriate information obtained from the AIS enables business decisions to be taken more quickly and accurately.	-	3.5	24.6	54.4	17.5	2.14	.743
The effective operation of AIS ensure that both internal and external users (Managers, Investors, Creditors) accurately make their decisions.	-	1.8	19.3	61.4	17.5	2.05	.666
AIS enhances management's ability to manage and control day to day activities.	1.8	7.0	10.5	61.4	19.3	2.11	.859
AIS enhances the overall quality of the company's decisions.	-	5.3	19.3	47.4	28.1	2.02	0.834

The above **Table 4.9** was the analyses of 11 Likert-scale questions to determine the participant's opinion and their level of participation on the "Effectiveness of AIS on Organizational Decision-Making".

The participant's thought on "**The AIS enhances the effectiveness of decision made in the organization**," there are 7% Disagree, 17.5% Neutral, 56.1% Agree, 19.3% Strongly Agree which shows that 75.4% respondents' consent that the use of AIS improve the effectiveness of decisions made in the organization with an Arithmetic Mean of 2.12 and Standard Deviation of 0.803. Examining the respondent's query on **"AIS helps in making basic strategic decisions of the business such as corporate vision, growth strategy etc.**" there is 8.8% Disagree, 15.8% Neutral, 64.9% Agree, 10.5% Strongly Agree which indicates 75.4% of total Participants believe that the use of AIS aid in making strategic decisions of an organization with an Arithmetic Mean of 2.23 and Standard Deviation of 0.756.

The participant's opinion on **"AIS aids in human resource management decisions such as HR policies, promotion, transfer & retrenchment,"** there are 1.8 % Strongly Disagree, 15.8% Disagree, 24.6% Neutral, 43.9% Agree, 14.0% Strongly Agree which indicate that 57.9% of total respondents have agreed with the above statement with an Arithmetic Mean of 2.47 and Standard Deviation of 0.984. Investigating the respondent's viewed on "**AIS supports in investment decisions such as capital raising, borrowing, liquidation, and dividend payments etc**." There are 1.8% Disagree, 21.1% Neutral, 56.1% Agree, 21.1% Strongly Agree which imply

that 77.2% of total participants consent that AIS support in investment decision in which an Arithmetic Mean is 2.04 with Standard Deviation of 0.706.

The participant's ideology on the investigation on "**AIS assists in marketing decisions such as selling and marketing strategy, promotional policies and market research etc**." There are 1.8% Strongly Disagree, 10.5% Disagree, 15.8% Neutral, 54.4% Agree, 17.5% Strongly Agree, an Arithmetic Mean is 2.25, Standard Deviation of 0.931. It does mean, 71.9% of total participants have provided positive reply regarding AIS assistance on marketing decision. Highlighting the respondent's opinion on "**AIS provides support to the managements in making future decisions through budgeting tools**," there are 1.8% Disagree, 19.3% Neutral, 57.9% Agree, 21.1% Strongly Agree. So, it refers that 79% of total respondents have concluded with this opinion that AIS have a strong positive relationship on making future decision through budgeting tools with an Arithmetic Mean of 2.02 and Standard Deviation of 0.694.

Along with that, the participant's opinion on "**AIS provides up-to-date information to the management when they are making important decisions about business activities**," there are 1.8% Strongly Disagree, 1.8% Disagree, 7% Neutral, 71.9% Agree, 17.5 % Strongly Agree which mean 89.4% respondents have that trust that AIS deliver up-to-date information during important decision in an organization where an Arithmetic Mean is 1.98 and Standard Deviation is 0.694. The following question is "**Appropriate information obtained from the AIS enables business decisions to be taken more quickly and accurately**," and the respondent's opinion on this question is, there are 3.5% Disagree, 24.6% Neutral, 54.4% Agree, 17.5% Strongly Agree. It means 71.9% of total respondents are agreed with the above statement with an Arithmetic Mean of 2.14 and Standard Deviation of 0.743.

The respondent's opinion on "**The effective operation of AIS ensure that both internal and external users (Managers, Investors, Creditors) accurately make their decisions**" there are 1.8% Disagree, 19.3% Neutral, 61.4% Agree, 17.5% Strongly Agree which mean 78.9% participants believe that an effective AIS facilitate both internal and external user's appropriately decision making with an Arithmetic

Mean of 2.05 and Standard Deviation of 0.666. Besides that, the participant's judgement on "**AIS enhances management's ability to manage and control day to day activities,**" there are 1.8% Strongly Disagree, 7% Disagree, 10.5% Neutral, 61.4% Agree, 19.3% Strongly Agree which indicate that 80.7% participants are consent with the above statement where an Arithmetic Mean is 2.11 and Standard Deviation is 0.859.

The participant's opinion on "**AIS enhances the overall quality of the company's decisions**," there are 5.3% Disagree, 19.3% Neutral, 47.4% Agree, 28.1% Strongly Agree which Show that 75.5% respondents believe that AIS have a huge positive impact on company's overall decision quality with an Arithmetic Mean of 2.02 and Standard Deviation of 0.834.

Based on the Likert-scale investigation of 11 questionnaires, we may conclude that AIS have a significant impact and strong positive correlation with company's decision making in which the average responses of the participants to the questions were between 1.98 and 2.47 and standard deviation were between 0.984 to 0.666. Even though, the percentages of participation in respondents are close to each other, the maximum participation rate is 89.4 for "AIS provides up-to-date information to the management when they are making important decision about business activities" and the lowest participation rate is 57.9 for "AIS aids in human resource management decisions such as HR policies, promotion, transfer & retrenchment."

4.1.5 Correlation Analysis

Correlation is a way of assessment between two variables and the terminology 'correlation' between two continuous, random variables is known as a Pearson product-moment correlation which is abbreviated as 'r' (Schober & Boer, 2018;1763).

In another word, If the change in one variable affect or influence the change of another variable, it does indicate that variables are correlated. Correlation Coefficient is used to measure the magnitude (high or low) and the direction (positive and negative) between variables. Correlation Coefficient range from -1 to +1. There can be a strong and positive correlation between variables if the value is represented by +1.0 and there

also can be an absolute and negative correlation between variables if the value is represented by -1.0. If the value of Correlation Coefficient is 0. It means that there is no correlation between variables (Obilor & Amadi, 2018; 12)

P value was first introduced in 1900 by Pearson which is very popular method of summarizing of any statistical test (Nahm, 2017; 241). According to Scientific Research, 'P' value always set at 0.05 level. When 'P' value is less than or equal to 0.05 or 5% which indicates that we need to reject the null hypothesis and the finding of the result will be considered as statistically significant (Verhagan et al., 2004; 261). In another word, we can say that 'P' value is significant and generally accepted if 'P'= 0.05 which also tell that 95 times out of 100, there is a significant and actual relationship between the variables and there are only 5% probabilities that the relationship doesn't present.

The result of the correlation analysis between independent variables and dependent variables are shown in the given below **Table 4.10**. The outcomes of correlations analysis have been compared against the hypotheses developed in this study.

Table 4.10 Pearson Correlation Analysis Between Variables.

	Effective AIS	Organizational DM
Effective AIS	1	0.867**
Pearson Correlation Sig. (2-tailed)		0.000
Organizational Decision Making	0.867**	1
Pearson Correlation Sig. (2-tailed)	0.000	

**Correlation is significant at the 0.01 level (2-tailed).
N=57

H1: There is an effective relationship between Accounting Information System and Decision-Making in an organization.

H2: There is no any effective relationship between Accounting Information System and Decision Making in an organization.

In the above **Table 4.10,** the relationship between effective AIS has been examined on organizational Decision- Making. The outcomes of the test indicates that there is a strong positive relationship between independent variable (AIS) and dependent variable (Organizational Decision) as well as the result is statistically significant in which ($r=.867$, $n=57$, $p<.01$). As the correlation between the variables is significant with a strong relationship. Hypothesis 1 is accepted and Hypothesis 2 is rejected.

4.1.5 Regression Analysis

Regression Analysis is a statistical technique for investigating the relationship between variables (Montgomery et al., 2012; 1). And researchers use Regression Analysis to make prediction (Sarstedt & Mooi, 2014; 194).

$Y= a + bX+ E$ is an example of simple regression model where X is an independent variable and Y is dependent variable. So, here X is the predictor or regressor variable and y is the response variable.

In our study, we have used SPSS-25 to conduct Regression analysis. In our research, Accounting Information System is an independent variable which predict better Decision-Making in an organization. From the findings in the linear correlation analysis, it has been revealed that An effective Accounting Information System is Correlated with Decision-making.

Table 4.11 Results of the Regression Analysis.

Independent Variables	β	Standard Error	t values	Sig.
(Constant)	1	.247	-1.471	.149
Effective AIS	.441	0.087	4.135	0.000

F value	13.405	1
R	.867	
R^2	.838	
Adjusted R^2	.776	

a. Dependent Variable: Organizational Decision-Making.
b. Predictor: (Constant)
*p<0.01

The aim of the regression analysis is to determine the impact of Accounting Information System on Organizational Decision-Making. The above **Table 4.11** present that (R^2 = .838, p<0.01). R-Square provides an estimate of the strength of the relationship between regression model and independent variable. Generally, R-Square value indicates the proportion of the variance explained by independent variable in the regression model which is approximately 83.8%. This value indicates that the independent variable explained Organizational-Decision making by 83.8%. It means that there are more other factors which not be considered.

Adjusted R-Square compares the explanatory power of regression model that contain different number of predictor. The amount of Adjusted R-Square that have been attained from the study is (Adjusted R^2 =.776, p<0.01) which explain that 77.6% changes in the dependent variable (Organizational Decision-Making) can be explained by the independent variable (Effective Accounting Information System). The others 22.4% is explained by other variables.

The beta (β) value for Effective Accounting Information System (β=.441, p<0.01) which illustrate the significant of the independent variable (Accounting Information System) on dependent variable (Organizational Decision-Making). Apart from that, the table also shows that the F value of 13.405 which is significant at <0.001 level.

4.1.6 Conclusion

From the above correlation analysis finding, we can conclude that the independent variables (Accounting Information System) are correlated with dependent variables

(organizational decision-making) and among all the factors, independent variables have the most significant impact on organizational decision-making.

CHAPTER FIVE

5.1 RESULT DISCUSSION, RECOMMENDATION, AND CONCLUSION

5.1.1 Introduction

This chapter will briefly discuss the result of the study that have been found throughout the analysis. At the same, it will provide some recommendations related to research problem and accounting information system for future research and finally it will draw conclusion. Basically, this chapter comprise the discussion, suggestions and conclusion.

5.1.2 Results Discussion

Based on the demographic analysis among 57 manufacturing and service companies, the multi-items factors were controlled to a series of reliability checks. The items of effective accounting information system and organizational decision-making are valid and reliable, each variable was subjected to an analysis of Cronbach's Alpha (α) are confident reliable for dependent variable is .769 and for independent variable is .841 as recommended. So, in this manner, the measures of effective accounting information system items appeared reliable and valid. The principle goal of the study was to find out whether there was any relationship between independent variable (accounting information system) and dependent variable (organizational decision making) based on the manufacturing companies situated in Istanbul city. The study has found out that an effective accounting information system have a significant positive impact and influences on organizational performance as well as their decision-making.

Here we can mention the results of both correlation and regression analyses which are also demonstrated that an effective accounting information system are positively related to organizational decision making as hypothesized.

5.1.3 Recommendation, Conclusion, and Further Research

After both theoretical and experimental study, we came to this conclusion that there is no way that we can deny the positive impact of accounting information system on both organizational decision-making and performance particularly in small and medium size manufacturing and service companies in Istanbul which has been revealed throughout validity and reliability test, correlation and regression analysis in the chapter four.

Those small, large and medium-sized companies that do not apply AIS as well as are not aware of the benefits of AIS during the decision-making of their organization. Government should take the necessary step in the interest of the economic development of the country to inform them about the uncountable benefits of using AIS on the organizational decision, if necessary, they should be forced to use AIS. However, in our study, most of the manufacturing and service companies in Istanbul use AIS in their decision making.

Based on the both theoretical and analytical study, we have found some problems related to the use of AIS and Decision-Making. Here, we have provided some suggestions on the use of AIS and Decision Making that are given below:

- The study strongly recommends that there is a significant positive relationship between AIS and Decision-Making in manufacturing and service companies in Istanbul, Turkey. Therefore, Manufacturing and service companies in Istanbul should use AIS to improve the accuracy of their all sort of organizational decision such as strategy decision, HRM decisions (HR policies, promotion, transfer and retrenchment), Marketing decision (selling, marketing strategy, promotional policies etc.), investment decision (capital raising, borrowing, liquidation and dividend payment) etc.
- Another recommendation should be imposed based on this study which is, all the department of an organization should enjoy the benefits of computer-based AIS especially accounting department to ensure that all the financial information that are provided to managers or decision makers are comprehensible, reliable, free from error and unbiased etc.

- This study further recommends that Manufacturing and Service companies in Istanbul should enhance their level of using AIS to reach organizational objectives, to get more relevant and accurate information as well as to maintain cost-effectiveness etc.
- The study recommends that the use of AIS is must to bring competitive advantage over competitors, fulfilling customer satisfaction, increasing productivity and reducing operational cost of any organization.

In the following part, we will suggest how all the problems that are related to AIS should be resolved to make a better and fruitful decision in an organization.

- Those companies that do not apply AIS due to heavy cost. In this case, Government should provide financial assistance to those companies in the interest of the country's economic development.
- The use of manual-based accounting system should be stopped due to frequent errors, time-consuming. This method also requires many employees to perform a single task which also causes to increase company's expenses. In this case, companies should get used to new technologies and reform their accounting method and policies.
- Those companies that use AIS but their system is not that much updated. In this case, they should update their system to the latest version to protect their accounting system from any sort of technological threat and risk.
- Those companies that apply advanced AIS on organizational decision-making but do not attain their desire outcomes. This can basically happen because of two reasons. Firstly, insufficient knowledge of employees on modern technology and secondly, lack of knowledge of managers related to the accounting field. In this case, companies should arrange training program for their accountants and other staff to enhance their performance so that they can provide accurate and timely information to management. At the same time, companies should appoint a manager who has adequate knowledge in the field of accounting to make accountants and other staff enable to understand the information for quick use.

In summary, the study endeavor to recommend that not only manufacturing and service companies in Istanbul but also all kind of companies in both Istanbul and other part of the world should emphasize in the production of high-quality accounting information in order to improve their financial performance as well as decision-making.

It is left to say that, to get more and deep information regarding research problems and to find its solution, further research would be requested. Such research should be conducted in various companies other than textile, food, plastic, and machinery. If possible, I would like to request researchers to conduct their research in both micro and large size companies as I have already conducted my research in small and medium size companies. I believe if they do research on micro and large companies and their finding result reflect my finding result, in that situation we will not hesitate to say that There is a positive and strong impact of accounting information system on decision-making.

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