



NEAR EAST UNIVERSITY
INSTITUTE OF GRADUATE STUDIES
DEPARTMENT OF BANKING AND ACCOUNTING

**THE INFLUENCE OF ACCOUNTING INFORMATION SYSTEMS ON THE
COMPANY'S EFFECTIVENESS**

M.Sc. THESIS

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Nicosia

January, 2022

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Approval

We certify that we have read the thesis submitted by Taban SAADI SEYAN titled **“THE INFLUENCE OF ACCOUNTING INFORMATION SYSTEMS ON THE COMPANY’S EFFECTIVENESS”** and that in our combined opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Banking and Accounting.

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Declaration

I hereby declare that all information, documents, analysis and results in this thesis have been collected and presented according to the academic rules and ethical guidelines of Institute of Graduate Studies, Near East University. I also declare that as required by these rules and conduct, I have fully cited and referenced information and data that are not original to this study.

Taban Saadi Seyan

18/January /2022

Dedication

To my Family and Friends

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My appreciation goes to my supervisor Assist. Prof. Dr. Ahmad Samour who has been of tremendous help to me. I would also like to thank my friends for their support and encouragement.

Taban Saadi Seyan

Abstract

The Influence Of Accounting Information Systems On The Company's Effectiveness

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The study examines the influence of accounting information systems on the company's effectiveness using information collected from banks in Kurdistan. As such, the study sought to find ways through which accounting information systems can be used to enhance the effectiveness of banks in the Kurdistan Region of Iraq. Five channels (leadership, change management, employee engagement, performance evaluation, and bank performance) through which accounting information systems affect bank effectiveness were analysed using SPSS version 24. Such assisted in testing the proposed hypotheses and this was accomplished using 194 bank employee responses that were regressed using the regression analysis method. The regressed results were tested using independent t-tests to verify if they hold valid. It was noted that accounting information systems have a significant positive influence on the banks' leadership, change management, employee engagement, and bank performance. Additionally, it was observed that accounting information systems have insignificant positive effects on the banks' performance evaluation efforts. It was recommended that bank managers must use a guided and mixed approach when using accounting information systems as part of their change management process to ensure that employees do not resist the adoption of accounting information systems. The study has managed to originally identify and test novel ways through which accounting information systems affect company effectiveness using information collected from banks.

Key words: accounting information systems, bank performance, change management, company effectiveness, employee engagement, performance evaluation.

Table of Contents

Approval.....	1
Declaration	2
Dedication	3
Acknowledgements.....	4
Abstract	5
Table of Contents.....	6
List of Tables.....	9
List of Figures.....	10
Abbreviations	11
 CHAPTER I 	
Introduction	12
Research Problem	13
Research Aims and Hypotheses.....	13
Organisation of the Study.....	14
Contribution and Justification of the Study.....	14
 CHAPTER II 	
Literature Review	15
The Concept and Characteristics of Information System.....	15
Financial Data Quality	18
Quality of Accounting Information and Financial Performance	19
Accounting Information System and Data Quality.....	20
Accounting Information Systems	24
Theoretical Ideas of AIS.....	25
The Contingency Theory and the Design Of Accounting Information Systems	26
Innovation Diffusion Theory	29

Socio-Technical Systems Theory of Information Technology Acceptance.....	30
Organisational Effectiveness Concepts.....	32
Empirical Literature Review	37
Hypothesis Development	40
Conceptual Model.....	42

CHAPTER III

Research Methodology	43
Research Approach	43
Population and Sampling Methods	43
Research Instrument.....	44
Data Analysis Tools	45
Ethical Considerations.....	46
Limitations of the Study.....	47

CHAPTER IV

Data Analysis and Presentation	48
Introduction	48
Demographic Analysis	48
The Use of AIS in Banks.....	49
Bank Employee Responses on Bank Effectiveness	51
Change Management as a Bank Effectiveness Indicator	51
Employee Engagement as a Bank Effectiveness Indicator	52
Bank Performance as a Bank Effectiveness Indicator	53
Performance Evaluation as A Bank Effectiveness Indicator.....	53
Leadership as a Bank Effectiveness Indicator.....	54
Correlation Analysis.....	55
Descriptive Analysis	57
Regressed Effects of AIS on Company Effectiveness	57
Hypothesis Test Results	59

The Impact of AIS on Banks' Leadership.....	59
The Impact of AIS on Banks' Change Management	60
The Impact of AIS on Banks' Employee Engagement	61
The Impact of AIS on Banks' Performance Evaluation.....	61
The Impact of AIS on Bank Performance	62
Reliability Tests Results.....	63

CHAPTER V

Conclusions, Recommendations and Suggestions for Future Studies.....	64
Conclusions	64
Recommendations.....	66
Suggestions for Future Studies	66
REFERENCES	67
APPENDICES	75

List of Tables

	Page
Table 1. Variable elements, scale and sources.....	45
Table 2. Demographic analysis.....	49
Table 3. Change management as a bank effectiveness indicator.....	51
Table 4. Employee engagement as a bank effectiveness indicator.....	52
Table 5. Bank performance as a bank effectiveness indicator.....	53
Table 6. Performance evaluation as a bank effectiveness indicator.....	54
Table 7. Leadership as a bank effectiveness indicator.....	55
Table 8. Correlation coefficient examinations.....	56
Table 9. Descriptive analysis.....	57
Table 10. Regressed effects of AIS on company effectiveness.....	58
Table 11. The impact of AIS on the banks' leadership.....	60
Table 12. The impact of AIS on the banks' change management.....	60
Table 13. The impact of AIS on the banks' employee engagement.....	61
Table 14. The impact of AIS on the banks' performance evaluation.....	62
Table 15. The impact of AIS on the banks' performance.....	62
Table 16. Summary of the hypotheses results.....	63
Table 17. Reliability tests results.....	63

List of Figures

	Page
Figure 1. The updated contingent framework.....	27
Figure 2. Conceptual framework	42
Figure 3. The Significant Benefits Of Using AIS To The Bank	50

List of Abbreviations

AIS:	Accounting Information Systems
GAAP:	Generally Acceptable Accounting Standards
IFRS:	International Financial Reporting Standard
MN:	Mean
SPSS:	Statistical Package for Social Sciences

CHAPTER I

Introduction

Accounting information systems (AIS) is an innovative method used to automate accounting entry, processing and reporting activities Sari and Maya (2018). Its importance can be linked to the need to deal with challenges observed when using manual data entry systems (Sajady, Dastgir & Nejad, 2012). With several issues affecting companies worldwide, it becomes important for organisations to adopt innovative and robust accounting systems. Notable accounting issues that have been affecting organisations range from fraud, mismanagements, negligence, high prevalence of errors etc., with notable examples including Enron and WorldCom. Studies in support of AIS contend that these issues among others can be addressed by adopting AIS (Daoud & Triki, 2013; Hla & Teru, 2015).

Adopting AIS can serve as a platform upon which organisations can introduce and implement organisational change management programs vital for improving their performance. This is because AIS can be used for numerous purposes and provides detailed information about the organisation (Mamić Sačer & Oluić, 2013). As such, financial information and organisational activities can be provided about ineffectiveness and inefficiency affecting the organisation (Rosa & Purfini, 2019).

Meanwhile, banks Kurdistan Region of Iraq stands to benefit a lot from using and innovative their AIS. Such will be vital for enhancing their effectiveness as strategies are taken to enhance their performance (Iskandar, 2015). With the prevalence of the financial crisis in the Kurdistan Region of Iraq, banks can use AIS to determine ways needed to manage poorly performing assets, activities and branches. However, much needs to be done to examine how AIS will be able to aid banks Kurdistan Region of Iraq to enhance their effectiveness. This is because related studies drew ideas from different sectors (Soudani, 2012) companies (Nzomo, 2013) and countries (Mamić Sačer & Oluić, 2013). Hence, this study contributes to existing studies by drawing information from banks in the Kurdistan Region of Iraq.

Research Problem

Asserting that AIS will have a positive effect on banks is subjective especially when untested. This is because the situation under which it affects banks or any company differs with respect to sectors (Soudani, 2012) companies (Nzomo, 2013) and countries (Mamić Sačer & Oluić, 2013). Such is the case with banks in the Kurdistan Region of Iraq and there are limited studies that look at this issue in the context of the banking situation in the Kurdistan Region of Iraq. Besides, ways through which AIS affects bank effectiveness need to be determined and such has not been done with respect to banks in the Kurdistan Region of Iraq. Furthermore, it is highlighted that the effects of AIS on telecommunications companies are through leadership, and change management, employee engagement, performance evaluation and organisational performance (Nzomo, 2013). However, such can lead to subjective and inconclusive ideas about how AIS affects banks if it remains untested. Thus, this study proposes to extend ideas by Nzomo to determine if the same variable avenues will have significant effects on banks in the Kurdistan Region of Iraq.

Research Aims and Hypotheses

The main focus of the study is to examine the influence of accounting information systems on the company's effectiveness. As such, the study will seek to find ways through which AIS affects the effectiveness of banks in the Kurdistan Region of Iraq. Unresearched ways through which AIS affects organisational effectiveness are leadership, and change management, employee engagement, performance evaluation and organisational performance. Hence, the following hypothesis will be formulated and tested;

- **H₁:** Accounting information systems has a significant positive influence on the banks' leadership.
- **H₂:** Accounting information systems has a significant positive influence on the banks' change management.
- **H₃:** Accounting information systems has a significant positive influence on the banks' employee engagement.

- **H4:** Accounting information systems has a significant positive influence on the banks' performance evaluation.
- **H5:** Accounting information systems has a significant positive influence on the banks' organisational performance.

Organisation of the Study

The study will potentially be structured into five chapters. Introduction insights about the need to use AIS challenges undermining organisational effectiveness and how AIS can address such issues will be provided in chapter one. The second chapter will provide details of the study's theoretical and empirical foundations. A description of the research methodology to be used to conduct the study will be given in chapter three. Data analysis and discussions, conclusions, recommendations will be provided in chapters four and five respectively.

Contribution and Justification of the Study

The study enhances understanding of the influence of accounting information systems on the company's effectiveness. Such has been lacking especially in the context of the Kurdistan region of Iraq as numerous studies focus on western economies. The study also draws ideas from banks as related studies often focus on organisations such as telecommunications companies (Nzomo, 2013). Furthermore, it uses theoretical ideas to develop a conceptual model that can be widely applied to organisations in any sector.

CHAPTER II

Literature Review

The widespread development of innovative technological devices and applications has stirred much-needed solutions in addressing individual and corporate challenges. Business activities have remained at the forefront of such developments and continue to experience diverse forms of innovative developments in technological devices and applications.

One of the key innovative technologies and application developments observed in business relates to the integration of information systems in accounting. This has resulted in the development of a concept or subject called accounting information systems (AIS). The introduction of AIS plays a vital role in business, which most studies are still yet exploring. One of such notable areas is organizational effectiveness and there is much that needs to be done as organizational effectiveness differs in both definition, approach and examination. More so, this can have different implications on financial institutions like banks and numerous studies are concentrated in non-financial matters. Hence, this calls for studies to address these issues.

This chapter offers details about the theoretical and empirical ideas regarding AIS. It addresses information systems developments that lead to the introduction and development of AIS. This chapter is essential for laying out a foundation upon which a discussion of findings will be carried out.

The Concept and Characteristics of Information System

Information systems can be technically defined as a set of tools and applications working to collect, store, process and distribute information (McLeod & Schell, 2007). Business-wise, information systems (AIS) can be regarded as the utilization of computer systems that aid with the collection, storing, processing and distribution of information in an organisation needed to establish details about the organisations and make related rational decisions. This is because AIS, is not restricted in meaning to its technological functions or elements but rather integrates functions and activities it plays when used in organisations (Abernethy & Guthrie, 1994). As a result, AIS can be used to provide details about the organisation leading to responsible

managers diagnosing problems and finding solutions to address them. Additionally, AIS can also provide general information about how a business is structured, activities are coordinated, who is working for the organisation, employment position, department, and where is the employee situated, etc.

Organisations rely on information in conducting their operational activities and such information needs to be collected and made available to the organisation. AIS, therefore, serves as a system that allows organisations to collect information from various sources. According to Hamilton and Chervany (1981), information systems are designed to collect information either by inputting information manually or retrieving them from secondary sources. This has been a major and notable benefit of AIS as compared to manual systems. Manual systems would take time to collect information (Barki & Hartwick, 2001) and more documents would be used to source information (Kim, Cavusgil & Calantone, 2006). Besides, collecting such information would be time-consuming and require several employees to assist with the data collection process.

Processing information is also another key aspect that organisations must considerably address. Studies reckon that inefficiencies in processing information can hinder organisational effectiveness (O'brien & Marakas, 2006; Yeo, 2002). Advanced information systems are capable of processing information into various forms like reports that are used to provide detailed information about particular organisational activities. Hence, information systems are beneficial and offer tremendous benefits compared to manual information systems (Hartwick & Barki, 1994). Such is instrumental in modern organisation situations requiring organisations to possess effective information processing systems and tools. O'brien and Marakas (2006) highlight that information systems serve to ensure that information is well processed and ready for distribution for use in the organisation.

Once information is processed, information systems prepare information for distribution throughout the organisation. Information distribution serves to ensure that reliable and relevant information is readily available to respective departments at appropriate times (McLeod & Schell, 2007). Information distribution also includes distributing information in required volumes and at the right time. Abernethy and Guthrie (1994) assert that decision-making activities can be delayed when organisations do not have effective information systems. Others contend that failure to

distribute enough information in the right quantities can hinder both the decision-making process and organisational performance (O'brien & Marakas, 2006; Yeo, 2002).

Certain organisational decisions have to be made at the appropriate time using reliable and relevant information. Several organisations can suffer from problems of declining performance levels due to the unavailability of relevant and reliable information. A study by Yeo (2002) highlights that firm competitiveness relies on the effective distribution of information within the organisation. The processed information can be used to provide hints about strategic areas the organisation can tap into to maximize the business' competitive edge. Such is an essential aspect, especially in the banking sector, which is characterised by severe competition. As a result, banks are forced to devise effective strategies to ease competition and gain a competitive position in the market.

Meanwhile, information systems can provide substantially to organisations when combined with other organisational activities like marketing, human resources, and finance. Accounting and finance are essential organisational activities that influence other activities and departments. Hence, the required effective and innovative systems are capable of capturing, processing and distributing the organisation's financial details. Accounting and finance are essential for regulating organisational activities to ensure that the organisation is well-positioned to achieve its objectives (Yeo, 2002). In addition, both the organisation's financial performance levels can be revealed using an income statement, while a balance sheet provides insights into its financial details (O'brien & Marakas, 2006). Other details like cash-generating and financing activities can also be made available using cash flows. All these activities are feasibly conducted by integrating accounting and finance with information systems. As a result, substantial benefits can be obtained from such efforts and hence, organisations should adopt what has widely become known as accounting information systems (AIS). However, this relies on understanding key essential aspects related to the concept and characteristics of information systems, that are addressed in the next section.

Financial Data Quality

Integrating accounting and finance with information systems is important for enhancing the quality of reported financial information (Zayed & Sinha, 2019). A study conducted by Al-Dmour (2019) notes that information systems have functions that assist in improving the data capturing, storage, processing and distribution process. This helps to reduce errors and ensure that accurate information is recorded and processed for use. Consequently, organisations can make correct and rational decisions.

Another study by Siqani and Vokshi (2019) noted that inherent information systems functions can be integrated with programmed accounting functions that allow information to be analysed and reported in different formats. This enhances the quality of reported details and ensures that the information is understandable.

A study by Al-Dalaïen and Dalayeen (2018) highlights that information systems can be programmed to ensure that accounting reports are prepared under the required accounting standards like international Financial Reporting Standards (IFRS). This is vital for maintaining good corporate governance practices and trust and operational transparency and reporting (Nzomo, 2013). With several problematic issues of lack of transparency, the importance of having sound and reputable financial reporting systems becomes of huge importance. Besides, propositions were made following a series of corporate scandals like the Enron saga that integrating Accounting and finance with information systems helps in eradicating corporate scandals and misconducts (Al-Okaily et al., 2020; Zayed & Sinha, 2019). Such has been a prominent issue in the banking sector and hence, adopting information systems in accounting and finance becomes an essential function. In addition, users of financial statements tend to benefit substantially by using quality financial reports prepared using information systems (Komala, 2017). Investors, creditors and other stakeholders benefit from high-quality financial reporting in structuring their dealings with the banks. Thus, it is important to note that information systems play a vital role in enhancing the quality of reported financial details about an organisation.

Quality of Accounting Information and Financial Performance

Information system developments linked to accounting and finance are linked to improvements in financial performance (Komala, 2017; Zayed & Sinha, 2019). Though studies are still trying to establish both the relationship and degree of impact between accounting information and financial performance, prevailing ideas contend that they are unilaterally related (Al-Dmour, 2019; Dornier, 2018). That is, there is a positive interaction between accounting information and financial performance. On the contrary, information systems are viewed as having intervening effects on the relationship between accounting information and financial performance (Al-Okaily et al., 2020). However, contrasting arguments were raised regarding the direct connection between information systems and financial performance. For instance, Komala (2017) argues that accounting information only serves to show information about the business' financial performance. This means that accounting information only provides financial performance details, hence, corrective measures or strategies undertaken are the ones responsible for causing the desired financial performance changes.

Meanwhile, Hashani and Berisha (2019) noted that a positive link exists between accounting information and financial performance because of the idea that the provided information is relevant for decision making. In another study by Zakaria, Ilias & Wahab (2017), it was considered that accounting information and financial performance are positively related. Accounting information is deemed to be of high quality when it enhances its users' ability to make informed decisions (Al-waeli et al., 2020) such decisions can be positively related to financial performance or other non-financial indicators. However, several studies consider that the importance of having high-quality financial statements is to enhance returns obtained by either shareholders or stakeholders (Al-Okaily et al., 2020; Nzomo, 2013; Siqani & Vokshi, 2019). This is mainly based on the idea that both shareholders and stakeholders will either have direct or indirect interests, respectively in an organisation to maximize their respective returns. Such returns can in turn lead to a direct or indirect improvement in financial performance. Nevertheless, it remains imperative that the quality of accounting information is essential for improving financial performance. These ideas have been empirically proven valid in various sectors like public utilities (Nzomo, 2013), finance (Siqani & Vokshi, 2019) and other industrial sectors (Komala, 2017). Hence,

expectations are that integrating information systems with accounting information will aid in enhancing banks' financial performance.

Accounting Information System and Data Quality

Aldegis (2018) noted that accounting information contains four distinct quality characteristics that are capable of enhancing financial performance. That is, the quality of accounting information is presumed to hinge on the extent to which it provides reliable and relevant financial details that enhance the comparability and understandability of the financial aspects of the company. Consequently, studies were undertaken to examine how each of the distinct quality aspects is related to financial performance. For instance, Nguyen and Nguyen (2020) noted that there is a unilateral relationship between reliability and financial performance. Such stems from the fact that reliable information allows organisations to have an accurate view of the organisation that causes them to make informed decisions leading to improvements in financial performance.

A study by Gunawan and Karimah (2017) highlights that accounting information relevance relates to the manner and level at which information is utilised to deal with challenges affecting the organisation and cause decision-makers to formulate effective and rational decisions. Similar suggestions are evident in Thorsten, Nicole and Wagener's (2020) study contending that sound accounting programs and activities aid organisations in making decisions improving the current, present and future conditions or status. Thus, AIS can be established as playing instrumental roles in improving the quality of decisions made by organisations. Some studies AIS as essential in conducting market assessment and providing essential information needed by organisations to determine if they can meet market expectations, challenges and opportunities (Gunawan & Karimah, 2017). Al-Dalaien and Dalayeen (2018) incorporated existing economic conditions into the analysis citing that sound economic analysis and prospecting can be established and effectively mapped by simply applying AIS. That is, AIS assists in providing details regarding the way the organisation is using its resources relative to the demands of the economy and industry. Strategies can be taken to enhance the competitive position of the organisation both in the market and industry using such information. Moreover, the benefits of AIS were also connected to investment decisions as studies consider them as providing investors

with reliable information required in rationalising decisions (Al-Dalaien & Dalayeen, 2018). Such information comes at the backdrop of arguments raised that mere reliance on non-financial data is inadequate and incapable of providing essential information about an organisation's operational capacity, position and condition.

AIS' relevance is attached by academic studies to several situations and aspects. For example, Zakaria, Ilias and Wahab (2017) assert that relevance is due to enforced regulations by governments and other boards to provide enough and reliable information to the public to enhance market efficiency. Such relevance is of no doubt vital in contemporary business situations where organisations are being forced by corporate governance boards to provide reliable information timely. Such information will facilitate investors and stakeholders in making rational and viable decisions leading to improvement in corporate and social responsibility performance. However, it is instrumental to note that transaction costs can hinder the AIS relevance and markets efficiency (Gunawan & Karimah, 2017). Market prices tend to respond to changes in the quality of information available on the market and any discrepancies can trigger prices to change adversely as expected. Besides, not all information is always and easily available on the market for information is always imperfectly supplied (Zakaria, Ilias & Wahab, 2017). Also, there are chances that non-financial data is not always informative and can obscure organisational problems. Hence, financial information is required to provide information capable of revealing the condition of the business and inherent problems.

Several concerns have been provided about AIS not being effective enough and thereby affecting issues affecting its effectiveness and suggesting solutions. Reference can be linked to Thorsten, Nicole and Wagener's (2020) study citing that AIS affects the fair value of liabilities and assets and that is not addressed and can cause 'forced sales'. However, this was presumed to be conditional and rare (Thorsten, Nicole & Wagener, 2020). FVA recorded transactions tend to follow a specific order that requires specific guidelines to adhere to so that they can be able to reflect real economic events. Zakaria, Ilias and Wahab (2017) contend that one of the notable problems that are encountered when such conditions are not considered is presumed to be loans deficits and poorly performing loans.

In a study by Al-Dmour (2019), it was argued that innovative systems like AIS serve to enhance the reliability of reported information. The study by Al-Dmour was

based on arguments citing that traditional accounting systems were undermined by reliability issues. The consequence of such effects is a reflection of the quality of decisions made. Hence, AIS is an innovative solution that organisations must adopt to enhance the quality of decisions made by managers. Such ideas are applicable in contemporary situations where errors are bound to affect the accuracy of financial information. Furthermore, reliability is important, especially in situations where managers can manipulate financial information. However, care must be taken to ensure that the financial statements are prepared according to the prevailing and designated financial standards like IFRS and FASB. For instance, FASB 20 contends that financial statements must be prepared accordingly to ensure that an accurate fair value of a business is recorded (Al-OKaily et al., 2020).

Dornier (2018) raised concerns about the verifiability of financial statements citing that biases and errors can exist and hence, new systems must be employed to enhance verifiability. This was supported by related suggestions made by Nguyen and Nguyen (2020) who considered verifiability as an essential feature and aspect of accounting. It is difficult to assess the verifiability of information when its sources are not easily accessible. Hence, AIS serves to enhance information storage and enhance its accessibility by authorised individuals. Furthermore, the importance of such motives is documented in academic research as it is considered that AIS aids in preventing the manipulation of financial information (Thorsten, Nicole & Wagener, 2020). There are also other aspects like accuracy that are attached to these aspects of AIS. For instance, Thorsten, Nicole and Wagener (2020) also contend that the fact that AIS stores information on a wide range of data storage systems allows it to be easily and timely access, managers can verify the accuracy of such information before it is published. This enhances convenience in managing the organisation together with its assets thereby ensuring that stated goals are achieved profitably and effectively.

Nevertheless, there is no warrant suggesting that the adoption of AIS is effective enough to provide accurate and reliable information. This is because managers can orchestrate certain actions that can hinder the retrieval of information required to verify transactions. For instance, Nozomo (2013) noted that one of the challenges undermining financial reporting and its usefulness in decision making is the manipulation of financial systems. Managers can try to hide information knowing well that the consequences of such information leaking will have devastating effects

on themselves and the organisation at large. Besides, there are always some errors that are difficult to eliminate and these errors can be having a significant influence on financial reporting (Komala, 2017). Al-Dalaien and Dalayeen (2018) highlighted that managers may intentionally choose to adopt non-financial data management systems to conceal a fraud. The list of effects and conditions influencing the application of AIS systems in organisations is further considered as having an ultimate impact on Level 2 and Level 3 fair values (FASB, 2016). This led to changes being made concerning the application of accounting standards about information systems role in organisations so as to avert such issues and a notable example is FASB 20.

The definition of accounting reliability is also another major concern as studies do not often agree as to how best such terms can be defined and applied. Organisations will in most cases define terms or adopt definitions that they see fit. Additionally, Al-Dalaien and Dalayeen (2018) asserted that such definitions are subject to change with time. This in turn imposes effects on the setting of standards, interpretation of findings and its reliability. The effects of such analysis were tested in terms of the reliability of the reported financial information in reflecting given indicators (Al-Dalaien & Dalayeen, 2018). The results showed that financial standard-compliant information or reports are reliable and tend to enhance the quality of decisions made. Such decisions are further reflected in other vital aspects such as profitability, corporate social responsibility, low employee turnover, etc. Al-Dmour (2019) noted that the relevance and reliability of such information are relatively high and desirable for making corporate decisions. However, Al-Dmour recommends that such information be used in conjunction with non-financial data to provide an accurate indication or estimation of complex measures.

Arguments also show that the use of AIS plays an essential role, especially for comparability purposes as organisations attempt to compare the business performance with that of other branches, organisations and international corporations (Gunawan & Karimah, 2017). Differences and similarities between branches, organisations and international corporations are drawn to make profitable decisions that sustain the organisation's operations. Nguyen and Nguyen (2020) regards this aspect as vital for business and investment analysis and recommend that proper accounting standards and financial systems like AIS be adopted to aid the effectiveness of such aims. Other studies also consider this vital by stating that the adoption of AIS enhances the

measurement and comparability of economic outcomes or transactions (Al-Dmour A, 2019).

It is highly required that the reported financial information be easily understandable regardless of its presented form and format (Aldegis, 2018). That is, users of financial information such as managers and shareholders should find it easy to read and interpret the financial information, and be able to make rational decisions. Thus, the application of financial accounting standards, in this case, becomes instrumental. Aspects like these have been drawing huge research attention as studies consider that financial statement users require accurate, easily readable and reliable information to have good insights into the business' operational activities, financial position and status or condition (Al-Dalaien & Dalayeen, 2018; Gunawan & Karimah, 2017). The implications of such actions are reflected on the prices of the organisation's share prices that tend to fluctuate in response to changes in published information. This implies that unclear, poorly reported, unverified non-understandable and non-comparability financial information hinders good decision making and cause the organisation share price to fall.

Accounting Information Systems

Al-Dmour (2019) views AIS as information that is prepared using a combination of information systems and human labour in collecting, storing, processing and distributing financial information. This definition depicts that AIS serves four essential functions in organisations related to the collection, storing, processing and distribution of financial information. Such information is distributed to relevant users who will use it to make decisions regarding their conduct or relationship with the organisation. Internal users of AIS will deploy the provided reports into the organisation's planning, controlling and management activities.

AIS is similar to information systems and contain similar attributes concerning the use of similar data and resources processing cycle generating planning, controlling and management information (Siqani & Vokshi, 2019). Nevertheless, AIS deals specifically with accounting data that is processed to provide specific financial information about an organisation (Al-Dalaien & Dalayeen, 2018). Transaction details are processed using AIS to provide financial information about how the organisation

is performing and working towards attaining stated goals. Alternatively, AIS converts inputs (transaction details and human activities) into outputs (financial reports, statements, etc.) needed in assessing the organisation's performance and financial position. As a result, AIS contains several interrelated system components responsible for performing specific duties assisting with the inputting, storing, processing and distribution of financial information.

AIS can thus be seen as an information system process that collects, organizes, processes and distributes financial information about an organisation's progress or performance in meeting stated goals. Such information provides more details needed in evaluating both the organisation's financial performance and position (Zayed & Sinha, 2019). These AIS functions are instrumental and their adoption in an organisation provides effective ways of developing sound strategies for managing an organisation. Additionally, they serve as an effective way of monitoring or regulating managerial and organisational activities to ensure that they are in alignment with required corporate laws and regulations (Al-Waeli et al., (2020). It is for these reasons that organisations are encouraged to adopt AIS. These benefits are distinct from the innovative, time effectiveness and convenience benefits provided by AIS compared to manual accounting methods of recording, storing, processing and communicating information. Moreover, the benefits of AIS are not restricted to these undermentioned objectives, but rather can be customized according to organisational needs, industry and activities to provide tailor-made benefits. Hence, it is crucial to adopt modern AIS, especially at a time when technology and internet-based applications are continuously being developed on an annual basis.

Theoretical Ideas of AIS

Several theoretical underpinnings underlie the subject matter of accounting information systems on reporting quality. Some of these theories include the Contingency theory, Innovation Diffusion Theory (IDT), and the Socio-Technical Systems (STS) Theory of information technology acceptance.

The Contingency Theory and the Design Of Accounting Information Systems

The contingency theory supports the application of information systems in an organisation but contends that conditional circumstances are influencing the effective use of information systems (McAdam, Miller & McSorley, 2019). This implies that the effective adoption and use of AIS in organisations must be well capable of meeting such conditions otherwise it will not yield desired outcomes. As such, studies consider that the initial condition relates to the organisational environment under, which the information system is to be implemented must be conducive (Alexander, 2017; Victor, 2020). That is, organisational managers must ensure that the organisational environment can effectively support and create conducive implementation and utilization conditions capable of improving the use and application of AIS in organisations. The second condition requires considering having a flexible organizational structure that supports the implementation and use of AIS (Steinbach et al., 2017). This is because an organisational structure influences the decisions made and how they affect both the implementation and use of AIS. Furthermore, an organisational structure can limit the distribution of resources required in supporting AIS activities (Alves et al., 2017). Hence, it is vital to ensure that both the operational environments and organisational structures are supporting both the implementation and use of AIS. As a result, the contingency theory can be regarded to be a theory that sets conditions warranting the effective implementation and use of AIS in organisations.

Other contingency ideas also highlight that there is no one applicable solution that is universally capable of solving all the problems (Vidal et al., 2017). This idea suggests that using AIS to solve particular financial and non-financial problems is not a guarantee that other countries or organisations will benefit the same. Consequently, contingency theory suggests that certain key contingencies must be made available to meet specific conditions and circumstances (Cheng, 2020).

Studies also consider that several organisational contingencies can be used to enhance the effective use of information systems, especially AIS (Alves, 2017; Nzomo, 2013). These studies reckon that there is much room available to improve the theoretical application of information systems in organisations. Such contingencies are believed to be responsible for creating optimal conditions required in improving the effective use of information systems in organisations. Thus, AIS is capable of

providing the required benefits on the condition that AIS has contingencies supporting its optimal use. However, these studies are criticized on the basis that change affects the effective role played by each contingency and how it affects information systems (Nzomo, 2013). Hence, changes in environmental business and technological developments render certain contingencies ineffective and others more effective. Besides, each mechanism of change is bound to change and develop with time and this affects the organisational adoption and implementation of AIS.

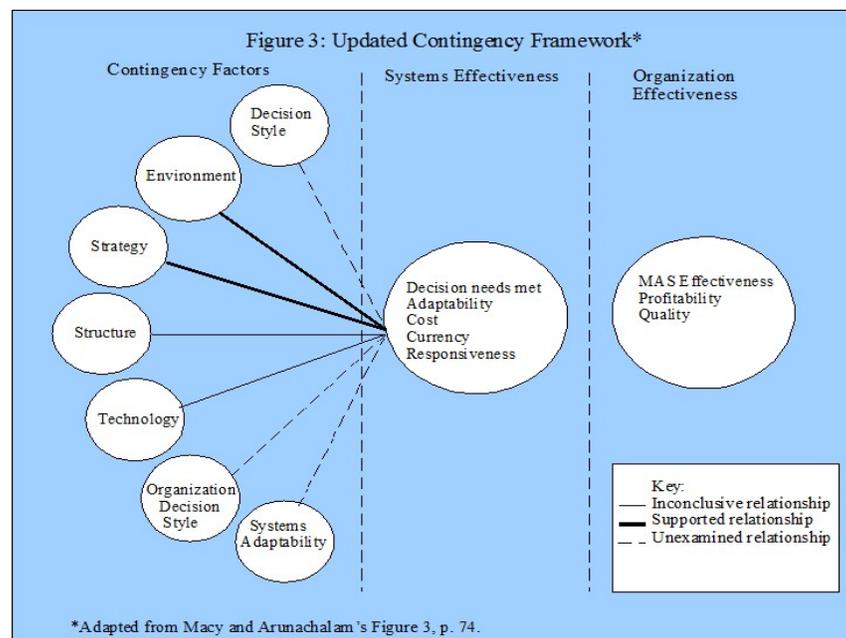
Nzomo (2013) noted that the contingency theory needs to be analysed in a much significantly dynamic context than before. Such a notion requires the adoption of process-based models capable of examining each change mechanism and how it can be implemented to enhance organisational control and management.

Franz and Robey (1987) proposed a framework that was further developed to analyse how AIS affects organisational effectiveness by Nzomo (2013). The model contends that contingency factors are influencing both systems and organisational effectiveness (see Figure 1).

Figure 1

The updated contingent framework

Source: Nzomo, 2013



That is, system effectiveness improvements were highlighted as being influenced by the decision style, environment, strategy, structure, technology, organisation decision style, and systems adaptability. These contingency factors tend to affect organisational effectiveness (AIS, profitability and quality) through changes in system effectiveness (Nzomo, 2013).

Study results regarding the effects of the AIS environment and strategy on system effectiveness are well supported empirically (Alexander, 2017; Hla & Teru 2015; Vieter, 2020). Organisation's decision styles and systems adaptability effects on system effectiveness are still yet to be examined as denoted in Figure 1.1. Meanwhile, there is inconclusive evidence about AIS' structural and technological effects on system effectiveness. Hence, Figure 1.1 provides novel ideas about the connection between AIS and organisational effectiveness.

The logic behind Figure 1.1 is that certain types of decision styles can either facilitate or hinder the effectiveness of AIS and its potential capacity to enhance both system and organisational effectiveness. Hence, proper and rational styles are autocratic, transformational or democratic decisions and leadership styles should be taken to enhance the effective use of AIS in organisations. The environment relates to organisational conditions under which AIS is implemented (McAdam, Miller & McSorley, 2019). A conducive organisational environment promotes the effective implementation of AIS. Alternatively, a bad organisational environment can hinder the effective implementation of AIS. Thus, organisations need to ensure that they create a conducive organisational environment. This also needs good strategies to guide the implementation process and ensure that AIS is aligned to promote the attainment of stated goals. Studies reckon that AIS fails to achieve required goals due to a lack of effective strategies (Hla & Teru, 2015; Vieter, 2020). Hence, it is theoretically and practically advisable for organisations to effective strategise AIS implementation programs.

The organisation structure is also another crucial factor organisations must consider when deciding on implementing AIS. Alexander (2017) noted that well designed or structured organisations that facilitate the follow of information and promote decision making are bound to encourage the effective implementation of AIS. This aligns with propositions given by Cheng (2020) contending that organisational structures are pivotal in innovating organisational activities. Furthermore,

organisational structures are linked to effective organisation decision styles (McAdam, Miller, & McSorley, 2019). The two are complementary and support each other. Organisations can use them as part of their strategic approach to decision making and information systems project implementation in organisations. Lastly, systems adaptability needs to be considered when implementing AIS. According to Hla and Teru (2015), the contingency theory depicts that evaluating AIS' effectiveness hinges on two methodological issues. That is,

- 1) Adaptive mechanisms used in achieving effectiveness
- 2) Theoretically-based measures of effectiveness

These issues undermine the potential implications of academic studies in establishing connections and inferring suggestions regarding the connection between AIS and organisational effectiveness. Hence, studies must consider these issues, especially when designing research instruments or methodological procedures in analysing their relationships. Additionally, Cheng (2020) notes that the contingency theory contends that a dependent outcome has a conditional association of at least two independent variables. Such a connection cannot be examined using unmoderated regression or correlation approaches established by previous examinations. Thus, it requires methods capable of using or holistic or reductionist methods in examining the model fitness. Examples of such methods include path analysis.

The other notable challenge relates to the level of measurement used. Hla and Teru (2015) noted that previous studies measured data at the individual level and used it in aggregated form to represent organizational-level data. Such causes the establishment of irrelevant deductions, inappropriate conclusions or inconsistent results, especially when the individual-level data does not provide an accurate reflection of the whole organization. Hence, there is a need to measure and collect data at appropriate levels when addressing the research question.

Innovation Diffusion Theory

The adoption of AIS in the organisation can be regarded as an ordinary organisational process through which technology is diffused in an organisation. Studies highlight that technology diffuses in an organisation as part of innovation (Al-Rahmi et al., 2019; Lou & Li, 2017). That is, diffusion innovation considers any

technological innovations as necessary and important for the effective functioning of an organisation.

The diffusion innovation theory can be regarded as instrumental in justifying the importance of innovation in organisations and how its adoption helps the organisation achieve stated goals. Meanwhile, it also indicates conditions needed in ensuring that the adopted technology will be able to provide the required benefits. As a result, the diffusion innovation theory states that the diffused technology, that is, AIS must possess the following five features;

- 1) Observability, which indicates the extent to which the AIS' outputs and gains are clearer to see.
- 2) Complexity, the AIS must be easy to use and must not be difficult to learn and complex to use.
- 3) Trialability, which provides details about the extent to which the AIS can be tried before the organisation commits to use it.
- 4) Relative advantage, the AIS must provide huge improvements compared to existing methods or tools.
- 5) Compatibility, the AIS must be compatible with organisational practices, rules and regulations. In addition, it must be consistent with its users' social practices and norms.

Technology serves to improve operational efficiency and effectiveness (Kwon et al., 2021). Pinho Franco and Mendes (2021) highlight that technology aimed to reduce the number of resources used in producing a product or providing a service. Lou and Li (2017) underscored the importance of technology citing that it reduces the amount of time needed in producing a product or providing a service. All these related reasons justify the diffusion of innovative technology in organisations like banks.

Socio-Technical Systems Theory of Information Technology Acceptance

Information systems like AIS are widely viewed as effective when employees are willing to accept such systems (Burton et al., 2012). This is because resistance to technological and information systems change hinders employees' willingness, motivation and engagement to use that system. As a result, the technology acceptance model is used to describe situations and conditions under which AIS can be accepted in organisations.

Foremost, there is an aspect of employees or AIS users having adequate knowledge and skills to use it. Studies show that most employees face challenges regarding the use of AIS and other systems or technologies when they do not have the desired knowledge and skills (Gunawan & Karimah, 2017; Zakaria, Ilias & Wahab, 2017). Besides, the prevalence of errors and mistakes in such cases is most likely to be high and hence, it is vital to ensure that employees accept the new system.

Secondly, is the aspect of compliance that must exist for AIS to provide effective results. According to Dornier (2018), AIS must be able to comply with existing regulatory standards so that it can be able to serve its intended purposes. Such an aspect is compromised when AIS is non-compliant with existing accounting standards like IFRS and FASB. The concept of compliance was further presumed to be connected to the organisation's systems and operations (Gunawan & Karimah, 2017). This means that the AIS must be coherent and work together with the organisation's designed systems and operational activities. Failure to ensure the existence of such conditions has adverse effects on the acceptance, use and effectiveness of AIS.

Thirdly, there is an aspect of control that is linked to AIS and its acceptance in organisations. For instance, Al-Dmour (2019) reckons that AIS must be able to enhance an organisation's control systems of fraud and errors. The importance of such aspirations is connected to high-quality decisions that must be made by the organisation. Hence, it is essential to note that the adoption of AIS serves to enhance an organisation's control of its resources and other desirable and non-desirable outcomes.

Fourthly, is the principle of enhancement through which it is regarded that AIS must serve to enhance organisational outcomes (Al-OKaily et al., 2020). Thus, both accounting and auditing activities significantly depend on AIS' effectiveness in enhancing organisations' ability to attain the stated financial reporting objectives and the quality of their outcomes. Investment, growth and development decisions are based on the quality of reported findings as well as the performance and position of the business as reported by the financial statements. Thus, inaccurate reports will undermine these activities and therefore, AIS will be accepted on the condition that it enhances these activities and outcomes.

It is, therefore, important to ensure that AIS is accepted in organisations and that its users are well trained and knowledgeable on how to use AIS. The importance of such efforts cannot be underestimated as they lead to improved performance and decisions related to investment, growth and development.

Organisational Effectiveness Concepts

Organisational effectiveness is an instrumental aspect in business and organisations must strive to ensure that they are effective in their operations. Such actions are linked to various capabilities. For example, highly effective organisations are well-positioned to withstand competitive pressure and studies depict that effective organisations have lower operational costs and revenue levels (Al-OKaily et al., 2020; Gunawan & Karimah, 2017). This is vital, especially in contemporary situations where various companies are increasingly and severely competing for resources and market share.

Meanwhile, organisational effectiveness is linked to other important organisational decisions. For instance, Thorsten, Nicole and Wagener's (2020) contend that decisions to expand the organisation's operations are influenced by the level of effectiveness enjoyed by the organisation. Additionally, most growth and development activities are financed out of the effective use of resources and hence, it is vital to ensure that there is a high level of effectiveness in organisations.

The adoption of AIS in organisations is aimed at enhancing effectiveness in storing data (Subramaniyam & Rajakumar, 2021). Data storage concerns have always been an issue in accounting as information can be lost or difficult to retrieve (Nguyen & Nguyen, 2020). AIS enhances information storage and makes it feasible to easily access information timely. Also, information processing needs to be undertaken within a short space of time to avoid delays that can hinder the decision-making process. As a result, adopting AIS is viewed as beneficial for avoiding delays in processing information (Aldegis, 2018). Reporting can also be considered as another aspect that has to be enhanced to improve its effectiveness. For instance, financial information has to be effectively reported to promote good decisions. Inaccurate or irrational decisions are bound to be made when organisations do not have effective reporting systems. Hence, the development of AIS was instrumental in dealing with the shortfalls of traditional accounting systems. Some modern AIS approaches are

considered to be integrating vital non-financial information. For instance, Gunawan and Karimah (2017) state that non-financial performance measures have become a shabby substitute for financial performance and “they will offer little guidance unless the process for choosing and analyzing them comes to rely less on generic performance measurement frameworks and managerial guesswork and more on sophisticated quantitative and qualitative inquiries into the factors contributing to economic results”.

It is vital to consider that financial information alone is not adequate to make rational decisions. For instance, Parker (2000) contends that there are non-financial aspects that are not measurable. Hence, relying solely on financial measures can provide an inaccurate description of the business and causes managers to make ill-informed decisions. Besides, financial measures on their own are viewed as riddled with several shortcomings (Subramaniam & Rajakumar, 2021). This is because of the differences organisations may choose to approach and record certain transactions, especially those that are not regulated by financial boards. The definition of terms and concepts is also another prominent issue that causes these financial measurement shortfalls. Studies and organisations can adopt different definitions of terms leading to different interpretations and approaches to financial recording, reporting and analysis standards and approaches.

Nevertheless, financial measures provide vital insights into the organisation’s activities and position. For instance, the information provided from AIS on matters related to sales, revenue and costs can be used to determine an organisation’s operational effectiveness (Gunasekaran, Williams & McGaughey, 2005). That is, the extent to which organisations sell more products, offer more services, reduce costs and maximise revenue is a good sign that they are operating effectively. Organisational managers together with other internal and external users of financial statements can make effective use of AIS to obtain information about the organisation's financial position. Hla and Teru (2015) state that a balance sheet acts as a source of information that indicates as to whether the organisation is sufficiently capitalised and adequately liquid enough to meet obligations and sustain operations. Aspects like profitability are also connected to the use of financial statements and hence, the adoption of AIS can facilitate the effective and sound judgement of the organisation's performance. For example, a highly profitable company indicates that managers are effective in managing shareholders’ equity. Additionally, such performance can also indicate

organisational managers' ability to profitably manage the organisation' assets. Therefore, the vitality of AIS cannot be underestimated as it is linked to various corporate indicators, users, shareholders and stakeholders. Besides, aspects like good corporate governance practices are also linked to the use and effectiveness of AIS (Antonio Pérez-Méndez & Ángel Machado-Cabezas, 2015; Hla & Teru, 2015; Gunasekaran, Williams & McGaughey, 2005). Such is instrumental in financial institutions like banks where a high level of accountability, and good corporate governance and social responsibility practices are enforced.

There are distinct ways of measuring company effectiveness and studies do not always provide significant evidence regarding which measure is effective. As a result, Choe (2002) contends that there should be a standard way of measuring company effectiveness. Such ideas show that there are possible disagreements that can be evidenced in such suggestions as studies encounter difficulties in establishing the most acceptable, valid and reliable measure of company effectiveness.

A study by Sousa, et al. (2006) provided financial performance measured using profits as an effective measure of company effectiveness. However, company effectiveness is measured using a combination of financial and non-financial indicators. Hence, confining to a single financial indicator might not provide adequate details about the banks. Therefore, integrating financial and non-financial indicators can aid in improving understanding of the way AIS affects company effectiveness. It is at this stage that various non-financial indicators are proposed.

Contemporary studies point to leadership as being another important indicator (Gunasekaran, Williams & McGaughey, 2005; Parker, 2000). However, leadership is regarded as an activity and not an outcome (Antonio Pérez-Méndez & Ángel Machado-Cabezas, 2015). Therefore, this limits the importance and role of using leadership as an effective and valid measure of company effectiveness. This study thrives base on ideas provided by Otley (2001), and use leadership to determine whether it will provide reliable, valid and significant results about it being used as an indicator of company effectiveness. Such efforts demonstrate novel ways through which this study addresses various challenges and research issues linked to AIS and company effectiveness.

In another instance, change management was used to highlight ways through which organisations can effectively measure the effectiveness of their organizational activities (Hla & Teru, 2015). This follows observations showing that organisations must be capable of introducing and managing both internal and external changes (Hla & Teru, 2015; Tuanmat & Smith, 2011). This is because change is regarded as posing both challenges and opportunities for organisations (Shettigar & KC, 2020). Therefore, the extent to which banks can implement and manage change can also be used to gauge and indicate its effectiveness. Change management is instrumental in ensuring that banks continue to operate effectively and profitably. There are various opportunities banks can take advantage of when they introduce and manage change. Moreover, this includes the extent to which banks are able to deal with challenges affecting bank effectiveness and performance.

Employee engagement is important and can be used as a vital measure of company effectiveness. It is believed that other organizational activities and outcomes like motivation, job satisfaction and even performance are a function of employee engagement (Subramaniyam & Rajakumar, 2021). This illustrates the importance of keeping bank employees well engaged in the bank's activities. In other words, employee engagement keeps employees well informed of the bank's activities. Furthermore, it can be used as a strategy through which banks can use to address bank performance-related issues. However, employee engagement has not been regarded as an indication of company effectiveness and yet it is important for measuring how banks are effectively managing their employees. This addressed empirical concerns regarding the role and use of employee engagement as an indicator of company effectiveness.

The ability to include organizational performance, which in this context is taken to mean bank performance is vital for academic and practical purposes. Bank performance provides detailed insights into the banks' operational capacity as to whether they are making profits, breaking even or making losses (Philip, M., Bhargava & Joseph, 2019). Often at times, bank performance is used to measure both financial and non-financial measures and aspects of the bank (Fischbacher-Smith, 2017; Kansal & Singhal, 2018; Nwanzu & Babalola, 2019). Extending such an idea in this study would play a crucial role in analyzing the connection between AIS and the banks' effectiveness. Besides, bank effectiveness can be measured in terms of how much

banks are generating as profits (Johnson et al., 2018). Banks generating more profits can be said to be more effective than their counterparts. The opposite holds true using these indicators becomes instrumental in measuring company effectiveness. Therefore, novel results will be established by incorporating bank performance as one of the indicators of bank effectiveness. The study viewed bank performance as essential and crucial for analyzing bank effectiveness. This is bank performance is highly regarded as crucial in academic studies. Hence, this will ensure that the concept of bank performance is broadened and extended to other wider aspects that are non-evident in most empirical studies.

Performance evaluation can be included in this context based on various empirical considerations. For instance, Holbeche (2018) asserts that banks capable of making sound performance levels are those that can effectively determine their performance levels. In another study, performance evaluation is seen as an indicator of an organisation that has been performing on its own (Shettigar & KC, 2020). Others consider that performance evaluation is the key to analyzing how the bank has been performing regarding other banks in the financial sector and other companies within the same economy (Fischbacher-Smith, 2017; Kansal & Singhal, 2018; Nwanzu & Babalola, 2019). These ideas do not limit the extension of the idea considering that performance evaluation is important and can be used in multiple ways (Subramaniyam & Rajakumar, 2021). Given such circumstances, it becomes important to note and consider that the effective ability of banks to measure their performance determines how much and effective they will perform on their own, against other banks and financial sector companies. Therefore, suggestions will be made in this context to use bank performance evaluation as another bank effectiveness indicator.

Using ideas that have been provided from other reviewed empirical suggestions, it can be mentioned that including leadership as one of the indicators of bank effectiveness would be instrumental. In a study by Holbeche (2018), it was mentioned that leadership is the chief cornerstone of any organizational activity. This is evident in studies showing that leadership covers a multiple number of organizational areas and activities (Johnson et al., 2018; Philip, Bhargava & Joseph, 2019). In some instances, leadership can be said to be an effective reflection of effectiveness as bank managers' actions and activities are weighed against their potential to manage and lead a team of employees (Fischbacher-Smith, 2017). Good

and effective leadership abilities can drive banks into achieving stated goals and cause them to register substantial improvements in performance. Other studies linked effective leadership to growth (Kansal & Singhal, 2018), competition reduction (Nwanzu & Babalola, 2019), development and expansion (Subramaniam & Rajakumar, 2021). All these ideas and suggestions are a mere reflection of effective banks about managing and leading employees into performing better than before. It is important to highlight as well at this stage that leadership will be and must always be considered as a notable bank effectiveness indicator.

The provided suggestions given in this section have highlighted that bank effectiveness also known as company effectiveness can be measured using five different ways that have been neglected by other empirical examinations. This has been leaving significant empirical gaps unaddressed and this study has managed to capture and address this empirical gap. As a result, an empirical model will be established using these five indicators and how they are connected to AIS. This leads to the development of the related hypotheses and such will be discussed after further reviewing related studies. Thus, the study has managed to draw ideas from other studies to establish five ways of measuring bank effectiveness. These five indicators will be used in analyzing how banks' efforts to implement AIS will influence their effectiveness.

Empirical Literature Review

Studies on AIS still have several issues to address as issues surrounding the use of AIS in organisations are continuously emerging. For instance, Al-Dmour (2019) noted that organisational structures are increasingly getting more fluid and complex in response to changes in business and economic situations. Besides, studies on their own are still yet to concur on several matters and one of the notable matters relates to the definition of AIS that is still yet to align and assume a common standard. This is evident in Dornier' (2018) study showing that there are vast ways of defining AIS. As a result, various complexities in approaches, assumptions and interpretations will be linked to the use of AIS.

Various authors examine the importance of AIS in organisations. However, few of them use empirical methods. Some authors such as Sari and Maya (2018) and Hla and Teru (2015) compare the influence of accounting losses or gains happening

from various accounting regulations. They argue that the influence of AIS is less and can be limited by the effects of non-financial indicators disregarded by organisations. Sajady, Dastgir and Nejad (2012) found similar results regarding the impact of AIS on organisations. However, these authors ignore the influence of non-financial indicators and therefore, their results are considered weak. Such insights are in alignment with previous suggestions made by Benston (2008) depicting that businesses need to incorporate non-financial information in decision making to enhance the reliability of ideas and their effective potential in dealing with reported business problems and enhance the quality of formulated decisions. But the inherent nature of shortcomings embedded in such matters compromises the reliability and relevance of such aspects and studies do not often agree about such matters (Al-OKaily et al., 2020; Dornier, 2018; Gunawan & Karimah, 2017; Zakaria, Ilias & Wahab, 2017). This entails that the relevancy and informativeness of AIS on company effectiveness are subjective.

Simulation studies can be used to find the influence of AIS on a bank's performance and effectiveness (Gup & Lutton, 2009; Valencia et al., 2013). However, there are drawbacks in their findings including simulating information is different from real information for banks as simulated data may not represent real bank data. Thus, real data should be used for analyzing bank data. Market reactions have been used by (Amel-Zadeh & Meeks, 2013) to the AIS usage to capture the influence of AIS on company effectiveness. However, stated that it is difficult to control the influence of the other variables when they applied regression models.

Gunawan and Karimah (2017) did a study that provided support to established results by Aldegis (2018) asserted that acceptable practices required in effectively governing organisations are interlinked to good reporting practices. Thus, the reiterated that AIS is vital for enhancing corporate governance mechanisms that in turn influence other aspects like an investment. Thus, their study findings demonstrate that the use of AIS in organisations has ripple effects on other organisational activities and outcomes and must be given due considerations. Their study together with other studies indicates the importance of adopting AIS in organisations and how instrumental it will be to ensure that the environmental conditions of the organisations are conducive for implementing AIS.

There are debates in favour of that the idea AIS has managed to improve the quality of reported earnings by companies in the USA. Other arguments put forward suggest that implementing AIS is costly and requires more time, effort and resources when training employees on how to use the newly implemented information systems (Al-Dalaien & Dalayeen, 2018; Siqani & Vokshi, 2019). This study seeks to examine the relevancy and effectiveness of AIS by drawing evidence from banks.

There is little evidence that AIS integrated into the economic crisis in a potential way as discussed by Najeb and Abdullah (2014). There is debate concertation about this issue. One of the major problems is that many advantageous properties are lost by AIS, especially when prices are not available in the potential markets. Some effective models should be applied. This issue complicates the effective use of AIS by organisations. Thus, there is a possibility to improve the operational details and rules of AIS. Nguyen and Nguyen (2020) stated that the role of AIS is limited to statements information and does not provide crucial non-financial details affecting company effectiveness. This means that the rules of existing AIS are fragile and the report of AIS has an impact on the managerial decision because it is independent accountants who unfolded financial statements. To define gains and underlying the impacts of the transaction on the balance sheet, a manager should define fair values for assets.

Al-Waeli et al., (2020) acknowledged the role of AIS in improving European companies effectiveness. Such is linked to the accurate pricing of both services and products. In another study, Iskandar (2015) established that AIS offers significant and vital financial statements preparable using IFRS and GAAP standards. This entails that AIS allows banks to make rational decisions and the effectiveness and quality of such decisions are high. This was also echoed by Siqani and Vokshi (2019) who depicted that AIS improves the quality of the bank's earning as bank managers adopt rational decisions that maximise the use of investors' funds.

Soudani (2012) underscored the importance of implementing AIS in improving company effectiveness among manufacturing companies. These observations mirror the situation with the Kurdish bank and require major attention. The findings depicted that manufacturing companies tend to gain in terms of huge improvements in competitiveness and call for the strategic and effective implementation of AIS. Al-Dalaien and Dalayeen (2018) demonstrated that organisations positively benefited

from the adoption of AIS through improvements in company effectiveness and similar observations are expected, especially amongst banks using AIS.

These reviewed insights demonstrate that there is a significant connection between a financial crisis, AIS and company effectiveness. Additionally, it can be inferred from these ideas that AIS has significant and vital benefits in organisations, especially banks. Other essential bank functions are also adversely affected as the financial crisis undermines their capacity to generate revenue or improve operational conditions and activity levels. Hence, the importance of FVA in ensuring that asset and liability values provide an accurate reflection of such values to guide both managers and investors in making rational decisions.

The examined studies described in this chapter provide considerable information about the effectiveness of AIS in improving organisational outcomes and how organisations can leverage AIS to improve other organisational indicators. As a result, the significance of AIS has been related to performance and decision making as managers and other stakeholders have to utilise the reported financial information to rationalise their decisions. Such ideas will be related to Northern Iraq's banking situations and will require that hypotheses be formulated and tested to determine their applicability in that context.

Hypothesis Development

Various studies look at the effects of AIS on organisations (Daoud & Triki, 2013; Hla & Teru, 2015; Mamić Sačer & Oluić, 2013). However, terms like organisational effectiveness are composed of various elements (Nzomo, 2013). Such affects the depth of study results obtained and this study seeks to deal with such issues. In addition, factors that affect the success of the application of an accounting information system need to be accounted for in different countries if AIS is to effectively provide the desired results (Iskandar, 2015). Such is vital in the Kurdistan Region of Iraq as numerous studies focus on different aspects like sectors (Soudani, 2012) companies (Nzomo, 2013) and countries (Mamić Sačer & Oluić, 2013).

A study by Nzomo (2013) conducted on telecommunications companies in Kenya shows that AIS does not only affect the financial aspects of the company. It highlighted that AIS also influences non-financial aspects of the company. As

expected, it highlights that leadership is a notable non-financial aspect of the company that is affected by AIS. The results showed that AIS has a significant positive impact on the telecommunications companies' leadership. This study proposes to test this idea regarding banks in Kurdistan to see if it holds. Hence, the following hypothesis was proposed;

- **H₁:** Accounting information systems has a significant positive influence on the banks' leadership.

In another study by Sajady, Dastgir and Nejad (2012) which examines the effectiveness of accounting information systems, it is highlighted that the potential effects of AIS are in the form of management aspects. The study findings highlighted that AIS introduces improvements in an organisation's management aspects. Such shows that AIS is a change management introduction, implementation and monitoring tool. That is, AIS forms a good base upon which organisations can introduce and manage change management programs. Hence, similar ideas can be expected regarding banks in the Kurdistan region of Iraq. Thus we can formulate the following hypothesis;

- **H₂:** Accounting information systems has a significant positive influence on the banks' change management.

A study by Soudani (2012) showed that AIS is useful because it leads to effective changes in organizational performance. The study, however, argues that changes in organisational performance take various forms but studies only significantly focus on financial measures of performance. It also highlights that non-financial indicators such as employee engagement have been significantly neglected. Hence, this study proposes to build on this idea and analyse how AIS affects the bank's effectiveness through employee engagement by formulating and testing the following hypothesis;

- **H₃:** Accounting information systems has a significant positive influence on the banks' employee engagement.

Hla and Teru (2015) did a study that examined the efficiency of accounting information systems and performance measures. Their study indicated that AIS is vital for measuring the performance of the bank and that of managers. Such implies that

AIS serves as a performance management and evaluation tool. By the same notion, the study will establish and test the following hypothesis;

- **H4:** Accounting information systems has a significant positive influence on the banks' performance evaluation.

Some aspects assert that AIS is vital for enhancing organisational performance. For instance, a study by Sari and Maya (2018) denotes that there are substantial improvements in organisational performance that occur as a result of the positive changes in the business process due to the quality of accounting information. This shows that AIS has a positive influence on the banks' organisational performance. Hence, the study will propose to test the following hypothesis;

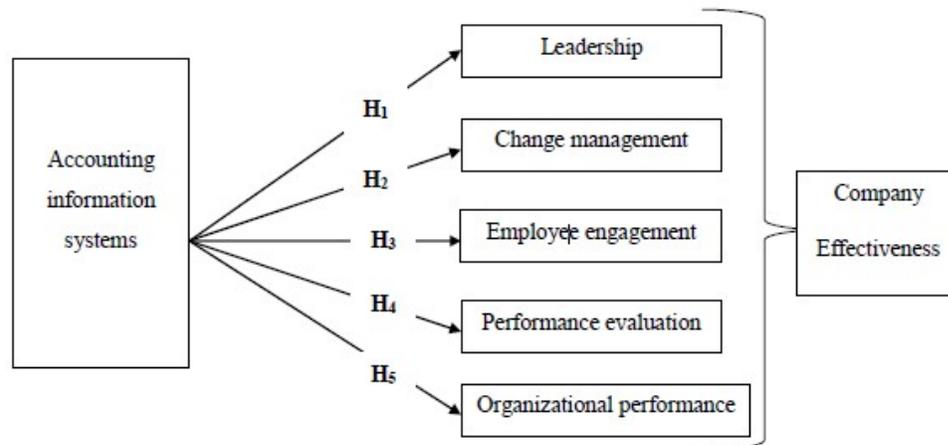
- **H5:** Accounting information systems has a significant positive influence on the banks' organisational performance.

Conceptual Model

Using ideas that have been provided in the above examinations, the following conceptual model can be developed to examine the influence of accounting information systems on the company's effectiveness.

Figure 2

Conceptual framework



CHAPTER III

Research Methodology

Research Approach

The study adopted a mixed approach to the examination of the influence of accounting information systems on the company's effectiveness. As such, the study proposed to use a combination of qualitative and quantitative analysis methods to analyse data collected from a sample of 5 banks based in the Kurdistan Region of Iraq. Questionnaires will be distributed to the 5 major banks in the Kurdistan Region of Iraq and the collected data will be analysed using SPSS version 25. Descriptive analysis tests, Pearson correlation coefficient test, independent t-tests and single linear regression analysis methods were used to test the proposed hypothesis and lead the discussion of findings.

Population and Sampling Methods

A purposive of 200 questionnaires were distributed to the 5 banks (Regional Trade bank, Kurdistan International Bank, Cihan Bank, Credit bank of Iraq and İş Bankası) in the Kurdistan Region of Iraq. Such was done to ease limitations imposed by the COVID 19 pandemic which can restrict the distribution and collection of the questionnaires.

Purposive sampling is defined as a sampling procedure that is used to determine the study participants using the researcher's judgements for the purpose of achieving specific study goals (Mahmud et al., 2020). In other words, it uses selective, judgements and subjective ideas to choose study participants. As a result, some scholars critique the use and importance of purposive sampling citing that the selected sample size might accurately reflect the actual population features (Bergin, 2018; Mahmud et al., 2020). Other studies also contend that the disadvantage of using purposive sampling is linked to its use of subjective judgements given by the researcher (Bergin, 2018; Washington et al., 2020).

However, it remains vital to use purposive sampling as more studies regard the importance of using purposive sampling as being linked to convenience (Mahmud et al., 2020; Williams, 2007). A study by Williams (2007) notes that purposive sampling

is vital because it allows the researcher to deal with essential issues that may hinder the effective study of the intended participants. Others reckon that purposive sampling is necessary because it allows researchers to focus on essential details rather than devoting significant time and attention to unnecessary study participants (Mahmud et al., 2020; Washington et al., 2020). Conditions influencing the research situation can also be used as part of the reasons researchers may resort to purposive sampling and the expense of other studies (Bergin, 2018). The purposive sample will also aid in ensuring that the research focuses on essential and relevant study participants. Purposive sampling is used in situations where huge numbers of study participants are involved and may lead to the research collecting information from potentially insignificant participants or aspects (Williams, 2007). For these reasons, purposive sampling was used in this study. As a result, a purposive sample of 200 respondents composed of information technology, accountants and financial managers was used.

Research Instrument

A questionnaire was developed using a research questionnaire used in a study by Nzomo (2013) which addresses similar concerns. However, Nzomo's study focuses on telecommunications companies and this study focuses on banks. Hence, the study contributes to existing literature providing evidence from banks in the Kurdistan Region of Iraq. Modifications will be made to the questionnaire using expert advice provided by the research supervisor. Such is pertinent for enhancing its validity and reliability in addressing the underlying research concerns. The study variables were all measured using a 5-point Likert scale. Table 1 shows the variables elements, scale and sources used to develop the questionnaire.

Table 1.

Variable elements, scale and sources

	Variable	Number of elements	Scale	Source
1	Accounting Information systems	11 items	5-point Likert scale	Nzomo (2013)
2	Leadership	8 items	5-point Likert scale	Nzomo (2013)
3	Change management	8 items	5-point Likert scale	Nzomo (2013)
4	Employee engagement	7 items	5-point Likert scale	Nzomo (2013)
5	Performance evaluation	8 items	5-point Likert scale	Nzomo (2013)
6	Organisational performance	7 items	5-point Likert scale	Nzomo (2013)

Data Analysis Tools

The study used SPSS to code and analyse the collected responses. Standard deviation will be used to examine the dispersion of the variables while mean will help examine the magnitude of the responses towards explaining the variables. Correlations between accounting information systems and organizational effectiveness will be assessed using the Pearson correlation coefficient test. The Pearson correlation coefficient test was used to provide details about how the variables are correlated with each other (Bergin, 2018). As such, a positive correlation entailed that the variables have similar co-movements. Alternatively, negative correlations show that the variables move in a negative co-movement manner.

Single linear regression analysis was also applied in this study to examine the effects of AIS on company effectiveness, which was measured five distinct variables (leadership, change management, employee engagement, performance evaluation, performance). The goal was to analyse the effects of these five variables together with their effects on company effectiveness (Assarroudi et al., 2018). Bergin (2018) contends that regression analysis is important for determining the effects of the independent variables on a dependent variable. This is essential in this study for providing answers that can be used to answer the stated research goals.

Regression analysis uses concepts that involving a constant (α), parameters represented by β and an error term (μ). Since the conceptual model was linked to AIS affecting company effectiveness (CE) in five different ways, the regression model was derived from five dependent variables effects leadership (L), change management (CM), employee engagement (EE), performance evaluation (PE), performance (PERF). This resulted in the development of the following regression model;

$$CE = \alpha + \beta_1L + \beta_2CM + \beta_3EE + \beta_4PE + \beta_5PERF + \mu$$

Independent t-tests were used to test the proposed hypothesis and determine if the provided regression results. Using the established regression model structure, the folioing regress hypotheses were established as follows:

- **H₁:** Accounting information systems has a significant positive influence on the banks' change management.
- **H₂:** Accounting information systems has a significant positive influence on the banks' employee engagement.
- **H₃:** Accounting information systems has a significant positive influence on bank performance.
- **H₄:** Accounting information systems has a significant positive influence on the banks' performance evaluation.
- **H₅:** Accounting information systems has a significant positive influence on the banks' leadership.

Ethical Considerations

Written informed consent letters were sent together with the questionnaires to ensure that the bank employees understood the purpose of the study and their rights as respondents. Such forms stated that the bank employees were free to decide to participate or not to participate in the study anytime. Also, the consent forms clearly stated that no benefits were obtained from participating in the study and that the study was not going to affect their work in any way possible. Considerations were also taken to ensure that the findings were not to be made public without the participants' consent. Such was done by ensuring that an application was submitted to the researcher's governing ethical committee.

Limitations of the Study

This study was limited to the level of exploring the impact of AIS on the company's effectiveness and relied on questionnaires to observe such effects. The study focused on banks in Iraq, thus this study's findings were not generalisable to other sectors because each sector had its distinct features. Besides, it did not analyse the effects of AIS on non-banking institutions.

CHAPTER IV

Data Analysis and Presentation

Introduction

The study findings were established using 194 questionnaire responses collected from 5 banks in Erbil, Kurdistan. Quantitative data analysis methods were employed in analysing the collected responses using SPSS version 24. The aim was to provide ideas capable of addressing issues concerning the unresearched ways through which AIS affects organisational effectiveness are leadership, change management, employee engagement, performance evaluation and organisational performance. Subsequently, the discussion of findings was derived from the analysis 194 questionnaire responses.

Demographic Analysis

The demographic analysis results of the 194 bank employees revealed that the bank employees were made up of 116 male employees and 78 female employees. 34% of the employees were in between the age group of 18-25 years, 38.7% between 26-35 years, 6.7% between 36-45 years, and 20.6% between 46-65 years. The longest-serving employees have been working for the banks for at least 16 years (7.2%) followed by 2.6% of the employees who have been serving for 11 to 15 years. 35.1 % have been working for less than five years and 55.2% for 6 to 10 years. 107 bank employees had work experience of 4-6 years, 5 banks employees had 7-9 years of working experience, and 14 employees had at least 10 years of working experience. 68 bank employees had the least amount of work experience of 1-3 years as presented in Table 2.

Table 2.

Demographic analysis

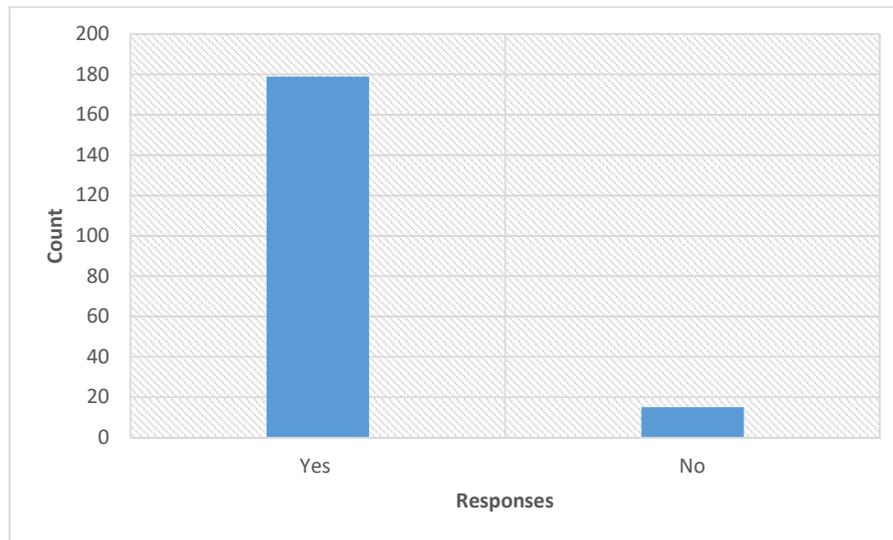
Variable	Description	Count	Percentage
Gender	Male	116	59.79
	Female	78	40.21
	Total	194	100
Age group	18-25 years	66	33.50
	26-35 years	75	38.66
	36-45 years	13	6.70
	46-55 years	40	20.62
	56 years and above	194	100
	Total		
Years of experience	1-3 years	68	35.1
	4-6 years	107	55.2
	7-9 years	5	2.6
	10 years and above	14	7.2
	Total	194	100

The Use of AIS in Banks

The secondary aim of the questionnaire was to determine how banks use AIS. All the 194 bank employees responded by indicating that their respective banks use AIS. This indicates that banks in Erbil made significant efforts to innovate their accounting systems to enhance financial accounting data inputting, storage, and processing activities (Nzomo, 2013).

The bank employees were asked questions using a questionnaire as to whether using AIS brings any significant benefits to the bank. 179 employees agreed by indicating that using AIS brings any significant benefits to the bank, while 15 employees disagreed by indicating no (see Figure 3). This implies that there is considerable agreement among bank employees of the importance of AIS. Additionally, the 15 negative responses entail that banks need to devise ways of further innovating and improving the use of AIS in banks to enhance its benefits to banks.

Figure 3

The Significant Benefits Of Using AIS To The Bank

Studies often indicate that using AIS is associated with various challenges (Komala, 2017; Zayed & Sinha, 2019). As such, the study sought to determine the validity of such concerns, especially regarding the availability of financial resources, which most studies consider as a key challenge undermining the adoption of AIS in organisations (Al-Okaily et al., 2020; Ernawatiningsih & Kepramareni, 2019; Nzomo, 2013; Siqani & Vokshi, 2019). The findings were in disagreement with these studies as all employees indicated that banks have the required financial resources to adopt and use accounting information systems. Such can entail that financial challenges limiting the adoption of AIS vary with the context of organisations under consideration. Hence, banks may not consider financial requirements or costs of adopting AIS as a challenge compared to non-financial institutions.

The second challenge was about whether banks have enough skilled and trained individuals to implement and use accounting information systems. Again, all the bank employees responded and indicated that their respective banks have enough skilled and trained individuals to implement and use accounting information systems. This further indicates that not all challenges listed as undermining the adoption of AIS are an obstacle to its adoption and implementation in banks. These results are provided

novel insights into the challenges of AIS adopting and implementing AIS in banks. Hence, the results have huge significant theoretical and practical contributions.

Bank Employee Responses on Bank Effectiveness

The developed conceptual model showed that bank effectiveness changes stimulated by AIS are observable through changes in leadership, change management, employee engagement, organisational performance, and performance evaluation. Subsequently, descriptive statistics were applied in the analysis of the bank employees' respondents about how they consider AIS as affecting bank effectiveness through changes in leadership, change management, employee engagement, organisational performance, and performance evaluation. The results are presented as follows.

Change Management as a Bank Effectiveness Indicator

Change management is crucial for ensuring that organisational activities remain aligned towards achieving required goals (Nzomo, 2013). The provided responses indicated that there is a relatively high agreement among the bank employees that bank managers can easily use an accounting information system to plan and execute an effective communication strategy (MN: 4.48; SD: 1.66). This was followed by computed findings showing that accounting information system helps banks in reducing the time needed to implement change (MN: 3.97; SD: 1.19).

Table 3.

Change management as a bank effectiveness indicator

Variable elements	Mean	Std. Deviation
An accounting information system helps banks in reducing the time needed to implement change.	3.907	1.059
Morale among bank employees is always positive when banks use accounting information systems.	3.253	1.386
The banking market that we operate in is relatively stable	3.593	1.094
Accounting information system assists banks in assessing and understanding the need and the impact of change	3.103	1.350
An accounting information system aids banks in aligning resources within the bank to support the change.	3.536	1.161
The accounting information system is important for managing the diverse cost of change in banks.	3.583	1.589
Bank managers can easily use an accounting information system to plan and execute an effective communication strategy.	3.974	1.193
Accounting information system helps banks in supporting staff and help them understand the change process	3.613	0.893

A relatively low number of employees indicated that AIS assists banks in assessing and understanding the need and the impact of change (MN: 3.10; SD: 1.35). A low variation depicted by a standard deviation of 0.89 suggested that there are insignificant changes observable concerning the idea that AIS helps banks in supporting staff and helping them understand the change process.

Employee Engagement as a Bank Effectiveness Indicator

Variable elements related to employee engagement were also analysed using mean and standard deviation values. Table 3. shows that most bank employees are committed to doing quality work (MN: 3.97; SD: 1.19). That is, AIS can be said to be assisting banks in making sure that their employees are well engaged. It also noted that AIS is vital for use in banks because bank employees have the materials and equipment needed to do their job (MN: 3.76; SD: 1.52) as depicted in Table 4.

Table 4.

Employee engagement as a bank effectiveness indicator

Variable elements	Mean	Std. Deviation
Bank employees know what is expected of them.	3.495	1.408
Bank employees have the materials and equipment needed to do their job.	3.6701	1.515
Bank employees are encouraged to develop their knowledge and skills.	3.639	1.555
Bank employees are committed to doing quality work.	3.974	1.193
Employee engagement tries to get every bank employee to achieve greater results.	3.613	0.893
Engaged bank employees are invested in their job and care about the success of their teams.	3.660	0.980
Engaged bank employees do not have a reason to look elsewhere for work.	3.593	1.045

Table 4. also shows that relatively insignificant AIS contributions were observed regarding its employee engagement role. That is, it was discovered that there were very low changes regarding ideas that employee engagement tries to get every bank employee to achieve greater results, and engaged bank employees are invested in their job and care about the success of their team as noted by their respective standard deviations 0.893 and 0.98.

Bank Performance as a Bank Effectiveness Indicator

Meaningful contributions to bank performance were related to indications showing that it is costly for banks to invest in accounting information systems (MN: 3.69; SD: 1.17), and total revenue increases when banks adopt accounting information systems (MN: 3.98; SD: 1.48). the other elements had low mean values less than 2.5 and the lowest mean value of 1.49 was related to the idea that the bank's income spent on investing in AIS reduces bank performance. This indicates low employees' considerations about investing in AIS as capable of reducing bank performance.

Table 5.

Bank performance as a bank effectiveness indicator

Variable elements	Mean	Std. Deviation
Total revenue increases when banks adopt accounting information systems.	3.397	1.476
Revenue inflows from the bank's income-generating assets tend to when banks adopt accounting information systems.	1.727	0.551
The company has been reporting increased market share ever since it started using accounting information systems.	1.696	0.461
Bank loans issued to customers are low during a financial crisis.	2.371	0.780
The bank's income spent on investing in accounting information systems reduces bank performance.	1.490	0.501
It is costly for banks to invest in accounting information systems.	3.696	1.172

Performance Evaluation as A Bank Effectiveness Indicator

All bank performance evaluation indicators had high mean values exceeding 3. This implies that the bank employees relatively agreed to each specific indicator's influence on performance evaluation.

Table 6.

Performance evaluation as a bank effectiveness indicator

Variable elements	Mean	Std. Deviation
Each team/department has measures of their quality of service.	3.644	1.029
Accounting information systems helps banks to regularly measure bank performance.	4.505	0.569
Bank's performance measures are shared regularly with staff.	3.644	1.148
Banks' financial reports are published regularly and available for review.	3.294	1.440
Bank managers can use accounting information systems to set personal and bank objectives.	3.613	0.887
Banks can use accounting information systems to learn about areas of the bank that could be improved.	3.665	1.127
An accounting information system is important for increasing job satisfaction and motivation	3.655	1.156
An accounting information system is important for increasing improving performance and profitability	3.789	1.092

Meanwhile, high indications about the link between AIS and the regular measurement of bank performance were observed (MN: 4.51; SD: 0.57). Such indicates that AIS assist banks in regularly measuring their performance levels. A low standard deviation of 0.57 indicated that there were insignificant responses regarding the idea that AIS helps banks to regularly measure bank performance (see Table 6).

Leadership as a Bank Effectiveness Indicator

The study sought to find ways through which 5 Leadership elements contribute towards improving bank effectiveness. Mean and standard deviation values were also computed for leadership variables elements.

Table 7.

Leadership as a bank effectiveness indicator

Variable elements	Mean	Std. Deviation
Banks' staff are involved in achieving the banks' vision and mission.	3.340	1.413
The bank leadership team have a clear vision and mission.	1.933	0.858
The bank vision is known to all bank employees and departments.	2.150	0.999
An accounting information system allows banks managers to implement their vision and value.	2.660	0.965
Accounting information system allows helps in boosting bank employees' morale	2.072	1.113
An accounting information system ensures effective communication between bank departments.	3.680	1.196
Accounting information system assists in motivating bank employees to work harder.	3.835	1.035
An accounting information system provides banks with appropriate informational resources needed to make good decisions.	3.258	1.294

There was a high common agreement among the bank employees that AIS assists in motivating bank employees to work harder. (MN: 3.84; SD: 1.04). This show that AIS assists banks in motivating employees possibly because of time effectiveness, convenience and ease of using AIS compared to other traditional methods. In addition, the findings revealed that AIS ensures effective communication between bank departments (MN: 3.68; SD: 1.20). This occurs due to the increased supply and availability of information regarding the banks' activities. On the other hand, Table 4.2 revealed that bank employees relatively disagreed AIS allows helps in boosting bank employees' morale (MN: 2.07; SD: 1.11) as depicted in Table 7.

Correlation Analysis

Correlation coefficient examinations were conducted by applying the Pearson coefficient test. The Pearson correlation coefficient examinations revealed that the variables AIS, leadership, change management, employee engagement and performance evaluation were positively correlated with each other.

A significantly high positive correlation of 0.896 was observed between the AIS and bank performance. This implies that the adoption of AIS is accompanied by improvements in bank performance. Secondly. Bank performance was positively

correlated with leadership by 0.510. This is because good leadership skills tend to motivate workers to work effectively thereby enhancing their productivity levels. In addition, good leadership skills are vital for improving the use of resources within the organisation.

Bank performance was also positively correlated with change management, performance evaluation and employee engagement by 0.553, 0.406 and 0.694, respectively. This implies that improvements in banks' ability to introduce and manage change, engage their employees and evaluate their performance will be accompanied by similar improvements in performance (see Table 8). These results denote that the adoption of AIS has significant improvements in leadership, change management, employee engagement and performance evaluation that are positively correlated with bank performance.

Table 8.

Correlation coefficient examinations

		Correlations					
		AIS	L	CM	PE	EM	PERF
AIS	Correlation	1					
	Sig.						
	N	194					
L	Correlation	0.510**	1				
	Sig.	0.000					
	N	194					
CM	Correlation	0.498**	0.540**	1			
	Sig.	0.000	0.000				
	N	194	194				
PE	Correlation	0.643**	0.676*	0.672**	1		
	Sig.	0.000	0.000	0.000			
	N	194	194	194			
EM	Correlation	0.566**	0.151*	0.053**	0.139	1	
	Sig.	0.000	0.035	0.000	0.053		
	N	194	194	194	194		
PERF	Correlation	0.896**	0.713**	0.553**	0.406**	0.694**	1
	Sig.	0.000	0.000	0.000	0.000	0.000	
	N	194	194	194	194	194	194

** . Correlation is significant at the 0.01 level (2-tailed); * . Correlation is significant at the 0.05 level (2-tailed).
 AIS=Accounting information systems; L=leadership; CM=change management; PE= performance evaluation;
 EM=employee engagement; PERF=performance

Descriptive Analysis

Mean and standard deviation values were computed using SPSS version 24 to determine the impact and dispersion or variation of the variables leadership, and change management, employee engagement, performance evaluation and organisational performance. High mean values of 3.74, 3.71, 3.66 and 3.58 concerning AIS, performance evaluation, employee engagement, and change management, employee engagement. This possibly indicates the employees' high relative importance towards the importance of these variables. Additionally, on a scale of 1 to 5, the employees can be said to have relatively agreed about the effects of these variables on bank effectiveness.

Table 9.

Descriptive analysis

	N	Mean	Std. Deviation
Accounting information systems	194	3.7394	0.449
Change management	194	3.5814	0.455
Organisational performance	194	2.3960	0.318
Employee engagement	194	3.6635	0.669
performance evaluation	194	3.7113	0.406
Leadership	194	2.8664	0.470

The employees can be said to have indicated that bank performance and leadership are of relative importance in improving bank effectiveness. This is because the associated mean values of 2.40 and 2.87 indicate some uncertainties possibilities and relative agreement, respectively.

The variable employee engagement had a high standard deviation of 0.669 and this indicates high responsiveness as compared to other variables. Hence, employee engagement can be said to have a high responsive effect on bank effectiveness. The other variables had low standard deviations.

Regressed Effects of AIS on Company Effectiveness

The study regressed the effects of AIS on company effectiveness using an ordinary least squares approach through which five different models were estimated. Both models had significant F-statistics values and this denotes that each of the five

models was statistically significant and had not outlier issues (Mahmud et al., 2020). Alternatively, the variance of each model was consistent and therefore, all the models were considered as valid for fulfilling the study's intended purposes.

The regressed results showed that there is a positive interaction between AIS and leadership of 0.146 units. The results denote that each successive improvement in AIS causes a significant improvement in the banks' leadership. The findings are consistent with related findings shown in a study by Nzomo (2013) depicting that AIS provides important information used by managers to effectively lead employees. Also, there is additional information that is provided using AIS that allow bank managers to find important information about each bank department's activities and performance. In such a way, proper action can be taken to lead and guide the bank towards achieving stated bank goals.

Table 10. also shows that AIS has a positive effect on the banks' change management process and activities. An increase in the use of AIS by banks enhances banks' ability to introduce and manage change with the bank. This is similar to study findings showing that AIS aids in providing detailed information about what needs to be changed in an organisation. Moreover, such information also provides ways banks can use to change those activities, especially poorly or non-performing departments, assets or activities.

Table 10.

Regressed effects of AIS on company effectiveness

Variable	Beta	R-square	Prob.	F-stat
Leadership	0.146	0.158	0.000	0.000
Change management	0.518	0.260	0.000	0.000
Employee engagement	0.210	0.412	0.000	0.000
Performance evaluation	0.810	0.560	0.000	0.000
Bank performance	0.325	0.440	0.000	0.000

The regressed results also show that there is a positive relationship between AIS and employment engagement of 0.210. Thus, it can be said that AIS is important for assisting bank managers to engage employees. A study by Soudani (2012) also agrees with these findings and highlights that AIS breaks down banking operations

and activities in such a way that it becomes easy to see how departmental employees are operating and performing. Thus, by having enough information about bank employees' operational activities and performance, bank managers can devise effective ways of engaging bank employees.

The results provided through the regressed effects of AIS on company effectiveness mirror related findings provided by other studies. Previous studies showed that AIS aids in evaluating an organisation's performance (Hla & Teru 2015; Mamić Sačer & Oluić, 2013), and either improving and/or managing the banks' performance (Daoud & Triki, 2013; Hla & Teru, 2015; Sari & Maya, 2018). The study results also provide similar suggestions as noted by the positive relationships between AIS and performance evaluation and, AIS and performance of 0.810 and 0.560, respectively. Therefore, it can be established at this stage that the adoption of AIS by banks results in significant improvements in the banks' performance evaluation and overall performance.

The F-statistics values were all significant and indicated that all the regression models were valid. Additionally, low R-square values of 0.158, 0.260, 0.412, 0.560 and 0.440 were obtained because each of the respective model was regressed using one independent variable (leadership, change management, employee engagement, performance evaluation, and bank performance).

Hypothesis Test Results

The computed conceptual framework shown in Figure 2.1 illustrated the connections between AIS and organisational effectiveness measures (change management, organisational performance, employee engagement, performance evaluation, and leadership). The goal was to test if the established regression results would hold the same. As a result, the connections were explained using hypotheses that were tested using t-tests and the results are presented as follows;

The Impact of AIS on Banks' Leadership

Table 11. results confirmed the existence of a significant positive interaction between AIS and change management. That is, the hypothesis that AIS has a significant positive influence on the banks' change management is acceptable at 5%. This aligns with previous study results showing that AIS provides managers with

reliable and relevant information about the organisation and its related activities (Nzomo, 2013; Siqani & Vokshi, 2019). Hence, the quality of rational decisions made by bank managers increases as more information is provided through AIS.

Table 11.

The impact of AIS on the banks' leadership

		95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
		Lower	Upper			
Pair 1	Leadership and accounting information systems	-0.94447	-0.80161	-24.107	193	0.000

The Impact of AIS on Banks' Change Management

The second hypothesis tested the connection between AIS and change management. The provided study results shown in Table 12. reveal that AIS has significant positive effects on the bank's change management activities (sig. = 0.000). This is because AIS provides details about the banks regarding the areas needing adjustments and improvements.

Table 12.

The impact of AIS on the banks' change management

		95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
		Lower	Upper			
Pair 2	Change management and accounting information systems	-0.22129	-0.09463	-4.920	193	0.000

This supports suggestions made using the regressed results and previous studies depicting that the increase of AIS by banks enhances banks' ability to introduce and manage change with the bank. This is linked to AIS providing detailed information about what needs to be changed in an organisation. Hence, AIS information denotes ways banks can use to change those activities, especially poorly or non-performing departments, assets or activities. Hence, it becomes relatively easy to devise effective changes capable of improving bank activities. According to Siqani and Vokshi (2019),

organisational change together with related management efforts is effective when change managers possess sufficient information about the organisation.

The Impact of AIS on Banks' Employee Engagement

AIS had significant positive effects on the banks' employee engagement strategies (sig.=0.040). This is because AIS provides financial details that are used to coordinate bank activities in such a way that all the employees are engaged to work towards helping the bank improve its operational effectiveness. AIS effectively processes financial information about the bank and such information is used to devise effective human resources strategies that engage and coordinate employees' activities into a single goal (Al-Okaily et al., 2020). Therefore, it can be accepted that accounting information systems have a significant positive influence on the banks' employee engagement.

Table 13.

The impact of AIS on the banks' employee engagement

		95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
		Lower	Upper			
Pair 3	Employee engagement and accounting information systems	-0.14848	-0.00338	-2.064	193	0.040

Both previous studies and the established regression model results proved that AIS breaks down banking operations and activities in such a way that it becomes easy to see how departmental employees are operating and performing. Moreover, banks that have sufficient information about bank employees' operational activities and performance, bank managers can devise effective ways of engaging bank employees.

The Impact of AIS on Banks' Performance Evaluation

Table 14. revealed that AIS has an insignificant positive effect on the banks' performance evaluation. Thus, it can be accepted that accounting information systems have insignificant positive effects on the banks' performance evaluation. These results are relatively similar to previous studies that denoted that AIS offers detailed income statements, balance sheets and other financial statement indicators used in evaluating both bank managers' and the overall bank's performance (Ernawatiningsih &

Kepramareni, 2019). Thus, AIS can be used to set targets or performance benchmarks assignable to each employee, department, branch or bank. But relying on financial information limits the effective evaluation of the bank's performance as other non-financial indicators of bank performance are disregarded.

Table 14.

The impact of AIS on the banks' performance evaluation

		95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
		Lower	Upper			
Pair 4	Performance evaluation and accounting information systems	-0.05632	0.00020	-1.959	193	0.052

The Impact of AIS on Bank Performance

Hypothesis 5 was accepted leading to the idea that accounting information systems have significant positive effects on bank performance (sig.=0.000). Supporting studies demonstrate that AIS shows areas that banks are experiencing problems (Ernawatiningsih & Kepramareni, 2019; Nzomo, 2013). Additionally, AIS also provides vital information about areas banks are generating more returns leading to improve bank performance. Hence, the adoption and implementation of AIS by banks cause an improvement in bank performance (see Table 15.).

Table 15.

The impact of AIS on the banks' performance

		95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
		Lower	Upper			
Pair 2	Organisational performance and accounting information systems	-1.40008	-1.28664	-46.713	193	0.000

The study has managed to identify and test ways through which, AIS affects company effectiveness using information collected from banks. Five related connections were established and observed to be influencing bank effectiveness through leadership, and change management, employee engagement, performance

evaluation and organisational performance. Table 16. provides a summary of the hypotheses results.

Table 16.

Summary of the hypotheses results

Null hypothesis	Result	Decision
Accounting information systems has a significant positive influence on the banks' leadership.	0.000	Accept
Accounting information systems has a significant positive influence on the banks' change management.	0.000	Accept
Accounting information systems has a significant positive influence on the banks' employee engagement.	0.040	Accept
Accounting information systems has a significant positive influence on the banks' performance evaluation.	0.052	Reject
Accounting information systems has a significant positive influence on the banks' organisational performance.	0.000	Accept

Reliability Tests Results

The reliability of the model variables was evaluated using Cronbach's alpha test, which indicates the variables' internal consistencies. A cut-off of 0.70 was used to determine the extent to which the variables were reliable. The variables AIS, change management, employee engagement and performance evaluation were highly reliable because their alpha values were above 0.70.

The variables bank performance and leadership were highly reliable as noted by their alpha values that exceeded 0.80. overall, all 6 variables had a combined internal consistency of 0.816. Thus, the model variables can be said to be highly reliable in explaining the impact of AIS on organisational effectiveness.

Table 17.

Reliability tests results

Variables	Cronbach's Alpha
Accounting information systems	0.734
Change management	0.783
Organisational performance	0.819
Employee engagement	0.787
performance evaluation	0.745
Leadership	0.835

Total Items = 6; Overall Cronbach's Alpha = 0.816

CHAPTER V

Conclusions, Recommendations and Suggestions for Future Studies

Conclusions

The study was primarily focused on examining the influence of AIS on the company's effectiveness using information collected from banks in Kurdistan. As such, the study sought to find ways through which AIS can be used to enhance the effectiveness of banks in the Kurdistan Region of Iraq. Such follows observations made showing that there are vast unresearched ways through which AIS affects organisational effectiveness are leadership, and change, management, employee engagement, performance evaluation and organisational performance.

Initial examinations made regarding the application of AIS in banks denote that there is a high considerable use of AIS by banks in Kurdistan. Hence, banks in Kurdistan are implementing AIS as an innovative way of collecting, storing, processing and distributing financial information to enhance the quality of decisions made. Thus, adopting AIS is linked to improvements in effectiveness through improvements in the quality of the rational decision made by bank managers, shareholders and stakeholders.

The study led to the conclusion that AIS affects bank effectiveness through change management, employee engagement, bank performance, performance evaluation, and leadership. These five channels of effectiveness are instrumental for strategizing methods capable of assisting banks to enhance their operational effectiveness and performance. Hence, the effectiveness of AIS is assessable and controllable based on these five measures and/or channels of effectiveness.

The study results were similar to previous studies as they denoted that AIS has a significant positive influence on the banks' leadership. AIS ensures that banks have accurate information about the bank's activities and can use such information to determine the best-required leadership styles in leading the bank employees and managing the banks.

The study results also align with previous examinations made about the role of AIS in change management. Consequently, the study results are in agreement with

ideas suggesting that AIS has a significant positive influence on the banks' change management. AIS provides details about the banks regarding the areas needing adjustments and improvements. Hence, it becomes relatively easy to devise effective changes capable of improving bank activities. Related theories and empirical findings also support this idea and suggest that organisational change together with related management efforts are effective when change managers possess sufficient information about the organisation.

AIS proved to be essential for improving bank effectiveness through employee engagement. That is, AIS has a significant positive influence on the banks' employee engagement. AIS provides financial details that are used to coordinate bank activities in such a way that all the employees are engaged to work towards helping the bank improve its operational effectiveness. Additionally, supporting studies consider that AIS effectively processes financial information about the bank and such information is used to devise effective human resources strategies that engage and coordinate employees' activities into a single goal.

Meanwhile, the study results reject the hypothesis that AIS has a significant positive influence on the banks' performance evaluation. This is because relying on financial information limits the effective evaluation of the bank's performance as other non-financial indicators of bank performance are disregarded. However, the study concurs with the idea suggesting that AIS has a significant positive influence on the banks' organisational performance. AIS also provides vital information about areas banks are generating more returns leading to improve bank performance. Hence, the adoption and implementation of AIS by banks cause an improvement in bank effectiveness and performance.

The study has managed to identify and test ways through which AIS affects company effectiveness using information collected from banks. Five related connections were established and observed to be influencing bank effectiveness through leadership, and change management, employee engagement, performance evaluation and organisational performance.

Recommendations

Having established resounding findings of the mediating effects of FVA on the relationship between a financial crisis and bank performance, the following recommendations were put forward;

- Bank managers must use a guided and mixed approach when using AIS as part of their change management process to ensure that employees do not resist the adoption of AIS.
- Bank managers must provide detailed information about the benefits of AIS and motivate them to participate in AIS training programs so that they remain engaged in effectively using AIS.
- Proper leadership styles like democratic and transformational leadership styles are needed to encourage the smooth and effective use of AIS in banks.
- Non-financial performance indicators are less susceptible to external noise than accounting measures, their use may improve managers' performance by providing more precise evaluation of their actions. Such indicators must be used together with financial indicators to effectively evaluate the banks' performance.

Suggestions for Future Studies

The study is confined to the examination of the on examining the influence of AIS on the company's effectiveness using information collected from banks in Kurdistan. As such, it does not consider differences in banking institutions about their adoption of AIS, nature, size and financial capacity address. Hence, comparative examinations are needed to compare bank effectiveness between different banking institutions like conventional banks and Islamic banks.

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APPENDICES

Appendix A: Research questionnaire

NEAR EAST UNIVERSITY DEPARTMENT OF BANKING AND ACCOUNTING

THE INFLUENCE OF ACCOUNTING INFORMATION SYSTEMS ON COMPANY EFFECTIVENESS

Dear Participant

I invite you to take part in a survey being conducted in partial fulfilment of the requirements of a Master's degree in Banking and Accounting and seek your views to understand how accounting information systems influences company effectiveness. The survey is being conducted to collect feedback from bank employees on their views about how accounting information systems influences company effectiveness.

While you will not experience any direct benefits from participation, information collected in this study may benefit the profession of marketing in the future by better understanding the role and implications of social media marketing on customer satisfaction.

Participation in this survey is highly valued, but voluntary. You are free to withdraw consent at any time. We will protect your anonymity and the confidentiality of your response to the fullest possible extent within the limits of the law.

Please note that your response is private and confidential. Individual respondents will not be identified in any data or reports and survey responses will not be linked with enrolment records. The survey should take about 10 minutes to complete.

By completing and submitting this survey, you are indicating your consent to participate in the study. Your participation is appreciated.

If you have any questions about this survey or would like further information, please contact me for further information, or you may contact the Thesis Supervisor, Dr. Ahmed Samour at Near East University using the details provided below.

Thank you for considering your involvement in this survey.

Yours sincerely

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SECTION ONE: DEMOGRAPHY SECTION

1. Gender	
<input type="checkbox"/> Male	<input type="checkbox"/> Female
2.. Age	
<input type="checkbox"/> 18-25 years	<input type="checkbox"/> 26-35 years
<input type="checkbox"/> 36-45 years	<input type="checkbox"/> 46-65 years <input type="checkbox"/> 66 years and above

3. How long have been working for the bank?	
<input type="checkbox"/> 1-3 years	<input type="checkbox"/> 4-6 years
<input type="checkbox"/> 7-9 years	<input type="checkbox"/> 10 years and above
4. Do your bank department use accounting information systems?	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
5. Does the use accounting information systems bring any significant benefits to the bank?	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
6. Does the bank have enough financial resources to adopt and use accounting information systems?	
<input type="checkbox"/> Yes	<input type="checkbox"/> No
7. Does the bank have enough skilled and trained individuals to implement and use accounting information systems?	
<input type="checkbox"/> Yes	<input type="checkbox"/> No

SECTION TWO: INFORMATIVE SECTION

This section contains statements that measure the influence of Accounting information systems on company effectiveness. Please tick your response according to the following scale:

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

		1	2	3	4	5
	Accounting information systems					
8	Accounting information systems significantly contributes towards improving organizational effectiveness.					
9	The organization and administration in your firm have improved since using accounting information systems.					
10	Bank employees are familiar with new technologies such as ERP, CRM (Customer Relationship Management Software) and Extensible Markup Language).					
11	accounting information systems can also present challenges to banks and users of reported financial information.					
12	Accounting information systems allow banks to manage its fiscal affairs with Government bodies					
13	Computerized accounting system allow banks to manage their cash position with other banks?.					
14	Accounting information system helps to enhance the accuracy of reported financial information.					
15	Accounting information system is important for improving data security in banks.					
16	Accounting information system is cost effective					
17	Accounting information system is user friendly.					
18	Accounting information system is scalable to meet specific needs of the bank.					
	Leadership					
19	Banks' staff are involved in achieving the banks' vision and mission.					
20	The bank leadership team have a clear vision and mission.					
21	The bank vision is known to all bank employees and departments.					
22	Accounting information system allows banks managers to implement their vision and value.					
23	Accounting information system allows helps in boosting bank employees' morale					
24	Accounting information system ensures effective communication between bank departments.					
25	Accounting information system assists in motivating bank employees to work harder.					
26	Accounting information system provides banks with appropriate informational resources needed to make good decisions.					

		1	2	3	4	5
Change management						
27	Accounting information system helps banks in reducing the time needed to implement change.					
28	Morale among bank employees is always positive when banks use accounting information system.					
29	The banking market that we operate in is relatively stable					
30	Accounting information system assists banks in assessing and understand the need and the impact of change					
31	Accounting information system aids banks in aligning resources within the bank to support the change.					
32	Accounting information system is important for managing the diverse cost of change in banks.					
33	Bank managers can easily use accounting information system to plan and execute an effective communication strategy.					
34	Accounting information system helps banks in supporting staff and help them understand the change process					
Employee Engagement						
35	Bank employees know what is expected of them.					
36	Bank employees have the materials and equipment needed to do their job.					
37	Bank employees are encouraged to development their knowledge and skills.					
38	Bank employees are committed to doing quality work.					
39	Employee engagement tries to get every bank employee to achieve greater results.					
40	Engaged bank employees are invested in their job and care about the success of their team.					
41	Engaged bank employees do not have a reason to look elsewhere for work.					
Bank performance						
36	Total revenue increases when banks adopt accounting information systems.					
37	Revenue inflows from the bank's income generating assets tend to when banks adopt accounting information systems.					
38	The company has been reporting increased market share ever since it started using accounting information systems.					
39	Bank loans issued to customers are low during a financial crisis.					
40	The bank's income spent on investing in accounting information systems reduces bank performance.					
41	It is costly for banks to invest in accounting information systems.					
42	Bank employees require training in order to be able to use accounting information systems.					
Performance evaluation						
43	Each team/department has measures of their quality of service.					
44	Accounting information systems helps banks to regularly measure bank performance.					
45	Bank's performance measures are shared regularly with staff.					
46	Banks' financial reports are published regularly and available for review.					

47	Bank managers can use accounting information systems to set personal and bank objectives.					
48	Banks can use accounting information system to learn about areas of bank that could be improved.					
49	Accounting information system is important for increasing job satisfaction and motivation					
50	Accounting information system is important for increasing improving performance and profitability					

Thank you for your participation

ETHICAL APPROVAL**BİLİMSEL ARAŞTIRMALAR ETİK KURULU**

14.07.2021

Dear Taban Saadi

Your application titled “**The influence of Accounting information systems on company effectiveness**” with the application number NEU/SS/2021/1066 has been evaluated by the Scientific Research Ethics Committee and granted approval. You can start your research on the condition that you will abide by the information provided in your application form.

Assoc. Prof. Dr. Direnç Kanol

Rapporteur of the Scientific Research Ethics Committee

Note:If you need to provide an official letter to an institution with the signature of the Head of NEU Scientific Research Ethics Committee, please apply to the secretariat of the ethics committee by showing this document.

SIMILARITY INDEX

Thesis			
ORIGINALITY REPORT			
5%	3%	2%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS
PRIMARY SOURCES			
1	Submitted to University of Duhok Student Paper		<1%
2	docs.neu.edu.tr Internet Source		<1%
3	Meiryani, Brilliant Alfred Lorenzo, Dedeh Maryani, Arfian Erma Zudana. "The Effect of Perceived Usefulness and User Competency on Accounting Information Systems Effectiveness", 2021 3rd International Conference on Cybernetics and Intelligent System (ICORIS), 2021 Publication		<1%
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