

THE ROLE OF ACCOUNTING INFORMATION SYSTEMS IN FIRMS' PERFORMANCE DURING THE COVID-19 PANDEMIC

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Abstract

How to cite this paper: Lawal, A., Mohamed, R., Abdalla, H., ElKelish, W. W., & Lasyoud, A. A. (2022). The role of accounting information systems in firms' performance during the COVID-19 pandemic. *Journal of Governance & Regulation*, 11(1), 45–54. <https://doi.org/10.22495/jgrv11i1art5>

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ISSN Print: 2220-9352
ISSN Online: 2306-6784

Received: 21.09.2021
Accepted: 10.01.2022

JEL Classification: M40, M41
DOI: 10.22495/jgrv11i1art5

This paper investigates the influence of accounting information systems (AIS) on firms' performance during the COVID-19 pandemic and how they help enhance employees' performance and the external auditing process. This paper is qualitative in nature using the inductive approach. In-depth primary data were gathered through semi-structured interviews conducted in the year 2020. Due to the pandemic, the interviews with ten auditors were done online through the Zoom software application. The empirical findings of this paper show a positive impact of AIS on firms' performance and a more significant influence on employees' performance and the auditing process. AIS reduces costs and human errors, eases operations, speeds up work tasks, and increases employees' productivity during the COVID-19 pandemic. The findings also show that there is no direct impact on firms' overall cash flow/revenues. This paper increases our understanding of how AIS can influence and improve firms' performance and the significance of implementation factors such as training. It provides practical guidelines for regulators and managers to utilize accounting information systems to perform better.

Keywords: AIS, Firm Performance, COVID-19 Pandemic, Employee Performance, Auditing Process

Authors' individual contribution: Conceptualization — A.L., R.M., and H.A.; Methodology — A.L., R.M., and H.A.; Investigation — A.L., R.M., and H.A.; Formal Analysis — A.L., R.M., and H.A.; Writing — Original Draft — A.L., R.M., and H.A.; Writing — Review & Editing — W.W.E. and A.A.L.; Supervision — W.W.E.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

Profit is the main motive of any business organization, and it can be calculated using a vital tool, firms' performance. Firms' performance is a well-known instrument for the assessment of the success of a business. However, measuring firms' performance is challenging, and several

constructs impact firms' performance (Ronan & Prien, 1973). Accounting information systems (AIS) are one of the most significant constructs used to measure firms' performance. Moreover, AIS plays a significant role in the field of accounting and auditing processes. By the same token, many scholars have defined AIS based on their own understanding. For example, Gökdeniz (2005)

defined AIS as the amalgamation of accounting with information, technology, and managerial approach. On the other hand, Sajady, Dastgir, Hashem Nejad (2008) stated that the AIS notion is a crucial element of organizational mechanisms for effective and efficient decision-making and control in business organizations. Through the information provided by AIS, the internal and external operators can give their views regarding the businesses. Thus, it is

unquestionable that technology's growth and expansion greatly impact all aspects of human life and businesses (Fitriati & Mulyani, 2020; Al-Hiyari, AL-Mashre, Mat, & Alekam, 2013). In line with this, AIS is also defined by Belfo and Trigo (2013) as a computer-based system to pursue accounting actions in combination with technology resources. Other scholars have defined the AIS as given below in Table 1.

Table 1. Summary of AIS definitions

<i>Authors and year</i>	<i>Definitions</i>
Bodnar and Hopwood (2010)	An accounting information system (AIS) symbolizes a series of bases (persons and equipment), which are intended to gather financial figures to the extent the data required for diverse decision-makers at a specific period.
Olusola, Olugbenga, Zacchaeus, and Oluwagbemiga (2013)	AIS is a system that supports the gathering and collecting of data and factual concerning proceedings that have an economic influence on organizations. It also helps in the preservation, handling, and announcement of such information to both internal and external investors.
Dandago and Rufai, (2014), Harash, Al-Timimi, and Alsaadi, (2014)	AIS is an identical dynamic to all business organizations. It is considered to support the administration and gathering of data, raw data, or ordinary data and transform them into financial data for the persistence of supplying them to decision-makers.
Okour (2016)	AIS are viewed as one of the auxiliary information systems used in ringing out administrative functions such as organizing, planning, decision-making, and controlling for the superior taking advantage of the existing assets.
Al-Dalaïen and Dalayeen (2018)	AIS is a prescribed system for ascertaining, determining, collecting, scrutinizing, arranging, construing, and collaborating accounting information about a specific body to a certain group.

Additionally, AIS is a comprehensive tool in the hands of administrators struggling to attain competitive advantage during this era of rapid technological expansion, intensive attentiveness, and challenging demand from consumers and business owners (Fatima, Ishtiaq, & Javed, 2021). Thus, the purpose of this paper is to investigate the role of AIS in enhancing firms' performance, employees' performance, and the external auditing process during the COVID-19 pandemic. In the current scenario, organizations strive to enhance their profit in the market through technological tools. AIS is an essential tool for organizations as it plays a crucial role and is well-known as the source of internal information. Moreover, AIS is considered as the most helpful tool towards the accomplishment and success of organizational goals (Akgün & Kılıç, 2013). Past studies have discussed AIS and its impact on better organizational performance and effectiveness (Kouser, Awan, Gul-e-Rana, & Shahzad, 2011; Sajady et al., 2008; Saira, Zariyawati, & Annuar, 2010). Most studies have employed survey questionnaires with different proxies focusing on large organizations' context and the impact of AIS (Grande, Estébanez, & Colomina, 2011). However, this paper is done through interviews to understand the role of AIS in improving firms' performance during the COVID-19 pandemic. Hence, semi-structured interviews with auditors were conducted. Our study aims to answer the following questions:

Q1: What is the impact of AIS on firms' performance during COVID-19?

Q2: In which situations and to what extent does AIS impact productivity during COVID-19?

Q3: What impact does AIS have on the auditing process during COVID-19?

The remaining structure of this paper is as follows. The literature review is presented in Section 2. Methodology and data collection are discussed in Section 3. Results and discussions are presented in Section 4. Lastly, Section 5 concludes with a summary and recommendations for future research.

2. LITERATURE REVIEW

Firms introduce and implement AIS in their daily operations for different reasons, which vary from one organization to another. However, AIS is a computer-based system that collects, stores, and analyzes accounting data to supply decision-makers with helpful information (Prasad & Green, 2015). Some firms use AIS to automate their accounting tasks (Huerta & Jensen, 2017), while others use AIS to improve strategies and efficiency (Hla & Teru, 2015). Therefore, several business firms operating in the field of accounting and auditing have invested in AIS, such as PricewaterhouseCoopers (PwC) and Ernst & Young (EY). Both firms are making use of AIS for process automation (Agnew, 2016), as well as Walmart (Nassauer, 2016). A brief summary of previous literature is presented in the Appendix, Table A.1.

2.1. AIS and firms' performance

There is an ongoing debate among scholars (Al-Waeli, Hanoon, Ageeb, & Idan, 2020; Sariwulan, 2020; Nasution, Kamil, & Muda, 2021) on how AIS's introduction and implementation influence firms' overall performance. A few studies have highlighted that AIS will lead to job growth (Huerta & Jensen, 2017), higher average returns (Grande et al., 2011), more significant adaptation to changing environments (Hla & Teru, 2015), as well as a high degree of competitiveness and more outstanding outcomes (Prasad & Green, 2015). In contrast, some scholars argue that AIS utilization has no competitive benefits for achieving better outcomes (Grande et al., 2011). This suggestion is because businesses that invest in AIS do not consistently achieve their performance targets. Furthermore, Ogah's (2013) findings revealed that high performance and profitability levels are not subject to AIS and accounting information. In contrast, (Muhindo, Mzuza, & Zhou, 2014) conducted a study on the impact of AIS on profitability where

the study's findings revealed a positive relationship. Some studies reveal that AIS increases firms' overall performance (Saira et al., 2010; Soudani, 2012) and organizational effectiveness (Dandago & Rufai, 2014; Onaolapo & Odetayo, 2012).

2.2. AIS and employees' performance

Previous studies (Fitriati, Tubastuvi, & Anggoro, 2020; Chipwere, Yushang, Chitesah, & Dasilveira, 2020) present conflicting findings on the impact of AIS on employees' performance. Hence, Fitriati (2016) found that the proper implementation of AIS and preparing the employees for its use directly affect the quality of the accounting information, top management commitment, and AIS effectiveness. Moreover, AIS improves professionals' performance, enhances their productivity, and helps employees gather high-quality information and improve their decision-making (Saganuwan, Ismail, & Ahmad, 2015). In addition, AIS helps users gain confidence in their work, hence reducing task errors (Medina, Jiménez, Mora, & Ábrego, 2014).

In general, the use of technology makes everyone's life more comfortable. All organizations are highly dependent on different systems, including AIS, to complete various tasks and operations (Mandala & Astika, 2019). AIS users, including accountants, managers, and auditors (external and internal), tend to feel more satisfied and pleased with their work quality depending on the application system's quality (Mandala & Astika, 2019). Therefore, the higher the satisfaction level of employees using AIS, the higher the employees' performance, which directly affects the firms' overall performance and increases efficiency and effectiveness (Fatima et al., 2021; Sariwulan, 2020). However, AIS is a vital tool that all organizations should utilize to improve and enhance employees' performance (Hla & Teru, 2015). Additionally, accounting systems help accountants and users rapidly process a large amount of financial data through the accounting system that includes AIS (Hla & Teru, 2015). It also enhances the users' performance and the reliability and validity of accounting information (Nasution et al., 2021).

On the other hand, some scholars find no direct impact of AIS on performance indicators (Medina et al., 2014). This finding mainly occurs when employees or users are not provided with sufficient training programs before implementing any AIS or when the system is low in quality and performs poorly (Grande et al., 2011). Besides, Saganuwan et al. (2015) stated that introducing a new technology or system could lead to technostress. This suggestion is defined as the anxiety and tension that employees feel when new technology is introduced in the workplace (*ibid*). When organizations introduce new technology, the employees might start behaving negatively and show resistance; but eventually, they will be motivated to adapt to the new change (*ibid*).

2.3. AIS and auditing process

The use of AIS among contemporary organizations is increasing due to the various benefits associated with its use (Hla & Teru, 2015). The auditing process can be defined as all those steps undertaken by

an auditor to ensure an independent examination of an entity's operations and financial statements, whereby this is to ascertain whether they reflect an accurate and fair view (Alles, Brennan, Kogan, & Vasarhelyi, 2018). Considering the growing complexity of modern-day firms, AIS significantly impacts the auditing process (Geerts, 2011). Large firms' enormous data pose a challenge to the auditing process, affecting the completion time and the quality of audit outcomes (Alles et al., 2018; Moffitt, Rozario, & Vasarhelyi, 2018). Therefore, the utilization of AIS will enhance the auditing process. This is because it makes it possible for auditors to easily follow every transaction trail without going through voluminous manual records, thereby saving time (Soudani, 2012). The use of AIS has made it possible for independent audit firms to automate their auditing processes (Moffitt et al., 2018). However, some studies stated that there is an indirect impact of AIS on the auditing process. Kamil and Nashat (2017) noted that information technology indirectly affects the auditing profession regarding methods, processes, and mechanisms. Furthermore, Geerts's (2011) findings indicate that the use of AIS by firms plays a crucial role in helping independent audit firms shift from manual to computerized auditing processes, which has helped to hasten the auditing process and enhance audit outcomes. However, Alles et al. (2018) noted that the AIS use could only help the auditing process if the management does not compromise it. Thus, before auditors rely on the AIS information, an audit of the system is necessary (Geerts, 2011).

3. METHODOLOGY

This paper follows the qualitative approach, which is usually exploratory in nature. This approach helps to reveal in-depth respondents' opinions and behavior and make subjective explanations about what is happening in reality. The sampling of this paper was attained through firms' auditors in the UAE. Thus, for this paper, purposive sampling was used to achieve the research purpose. The online semi-structured interviews were conducted with 10 highly experienced respondents with backgrounds in audit, accounting, and information technology through the Zoom software application during October and November 2020. In qualitative research, an interview is a vital tool that determines how each individual thinks of themselves and their worlds. The aim of conducting the interviews was to discover new visions and understandings about the respondents. Therefore, the interviews were recorded with the verbal consent of each respondent and were manually transcribed.

The thematic analytical procedure illustrious (Denscombe, 2008) was used to analyze the data collected from qualitative research. Turner (2010) acknowledged that there are various methods for evaluating qualitative data, including categorizing and coding data into units of analysis and classification of themes and relationships. Thus, the collected data from interviews were recorded, transcribed, coded, and arranged into different themes for analysis (Table 2). The respondents' responses and reactions generated from the interviews are linked to the research objective of the study. The themes were made based on

the research purpose, which is the role of AIS in firms' and employees' performance and the external auditing process. The key theme is that the role of AIS in enhancing firms' performance is divided into

two themes: employees' performance and the external auditing process, in which each of the themes was further subdivided into sub-themes (Figure 1).

Figure 1. Themes and sub-themes

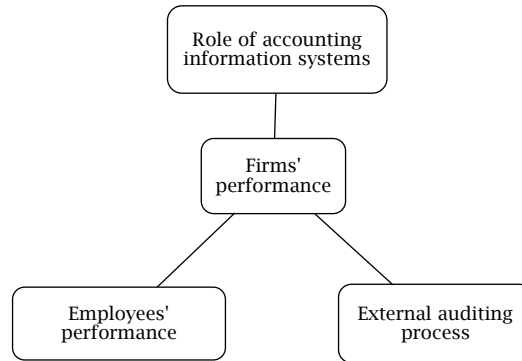


Table 2. Interview coding and themes

Code	Theme	Sub-theme
FP	Firms' performance	AIS and profitability AIS and cash Flow AIS and revenues AIS and market share
EP	Employees' performance	AIS and employees' productivity AIS and employees' effectiveness AIS and employees' work quality AIS and employees' efficiency
EAP	External auditing process	AIS and selection phase AIS and planning phase AIS and executive phase AIS and reporting phase AIS and follow-up phase

4.1.2. AIS and cash flow

Interviewees documented that AIS has no direct impact on a firms' overall cash flow during the COVID-19 pandemic. Instead, they revealed that the cash flow depends on several other factors such as the company's operations, nature of the business, and external factors such as the global COVID-19 pandemic. For example, interviewee No. 4 clearly stated, "Cash flow management depends upon the management policies, how the company's working capital requirements are met and how they frame their working capital policies". Interviewee No. 6 pointed out that, "AIS does not influence the firm's cash flow in any way; its function is to record the activity of cash flow and business transactions". Besides, interviewee No. 9 clearly stated, "The cash flow of companies will depend on their activities, such as the business they are in". This feedback is consistent with previous studies such as Albashabseh, Alhroob, Irbihat, and Javed (2018) and Grande et al. (2011).

4. FINDINGS AND DISCUSSION

The researchers aim to determine the role of AIS in firms' performance, employees' performance, and the external auditing process during the COVID-19 pandemic. Therefore, the findings and discussions are given below.

4.1. The impact of AIS on firms' performance

4.1.1. AIS and profitability

The empirical findings reveal that the interviewees agreed to the direct impact of AIS on the overall profitability during the COVID-19 pandemic. Respondents highlighted that AIS would reduce costs for the company in the short and long run, and lead to substantial cost savings. As interviewee No. 1 said, "Running costs can be avoided by implementing AIS". Besides, the findings show that AIS helps make the process more comfortable and more efficient for the accountants and auditors; and leaves no room for human errors due to the automation of tasks. For example, interviewee No. 4 said, "Everything is automated; business processes, from the start of the transactions to receiving cash, to the preparation of financial reports. Everything is combined in a financial system. The completeness factor is a major issue with auditors. However, with AIS in place, the issue has been resolved". These findings are consistent with previous studies such as Grande et al. (2011) and Dandago and Rufai (2014).

4.1.3. AIS and revenues

Other findings show that interviewees believed AIS has no direct impact on a firms' overall revenue during the COVID-19 pandemic. They highlighted that more significant factors impact revenue at play, such as the current COVID-19 pandemic and the businesses' nature of operations. For example, interviewee No. 7 said, "Using AIS may not have had a quantifiable impact on revenue because the firm's revenue is mainly dependent on our client's operations, revenue and ability to afford the audit fees". Interviewee No. 9 clearly stated, "I do not think there is any impact because a firm's revenue will be affected based on factors such as increase or decrease in sales, demand, and supply, external factors. There will be no direct impact of AIS on the firm's revenue; rather, the benefit may be indirect. AIS will be advantageous to the company in other ways and aspects such as less stress and making work easier for the employees". This finding is consistent with previous studies such as Ogah (2013).

4.1.4. AIS and market share

The findings revealed the interviewees believed that AIS has no direct impact on firms' overall market share during the COVID-19 pandemic. Nonetheless, few interviewees agreed that there is an indirect positive link between the two. For example, interviewee No. 2 stated, "Let us consider the well-known companies, Apple and Microsoft. They are at the top of their game and dominate the market in terms of software, licenses. When we think or look at these companies, do we even consider the companies' AIS? I believe the answer is no". Once again, this implies that the market share is affected or impacted by other substantial factors. Interviewees highlighted that AIS will benefit a firm's overall performance but will not necessarily increase the market share. As interviewee No. 9 said, "This also has to do with other factors such as increase or decrease in sales, demand, and supply, increase or decrease in profitability, revenue and so on. For example, if the performance of an organization has decreased during this time of COVID-19, AIS will not increase or help in increasing the organization's market share". This finding is consistent with previous studies such as Muhindo et al. (2014).

4.2. The impact of AIS on employees' performance

4.2.1. AIS and employees' productivity

The findings show that most respondents believed AIS had induced employees' productivity during the COVID-19 pandemic. Respondents highlighted that AIS allows employees to increase their productivity. This finding is because without AIS, running a business is almost impossible, especially with the pandemic restrictions that force employees to work from home. For example, interviewee No. 2 said, "AIS has a great impact on the employees' performance and the overall productivity of the firm, especially with COVID-19 because you know AIS provides integrated systems that allow you to make direct amendments to your financial statements virtually given the restrictions of COVID-19, and almost all people are working digitally everywhere from their place". Besides, interviewee No. 10 said, "A reliable accounting information system can enhance the employees' productivity, especially during the COVID-19 because this is the only platform for them. If it is not available, there is nothing that can be done". This finding is consistent with previous studies such as Saganuwan et al. (2015).

4.2.2. AIS and employees' effectiveness

Other findings show the interviewees agreed that AIS enhances employees' effectiveness during the COVID-19 pandemic. This finding is because it allows employees to do their tasks effectively, even while working from home. For example, interviewee No. 2 mentioned, "Having access to AIS from home made it possible to get the tasks done effectively". Interviewee No. 4 clearly stated, "AIS makes you more productive and effective in getting your tasks done, and with COVID-19, employees were able to be effective due to having access to AIS and staying connected". Additionally, interviewee No. 10 said, "AIS is the tool that employees use to ensure the effectiveness of their work". This finding is

consistent with previous studies, such as Fitrius (2016). Furthermore, interviewees highlighted that training is an essential factor in this area. As interviewee No. 3 mentioned, "Employees should be trained before the implementation of an accounting system for it to have an effective impact on them". This finding is consistent with a few studies such as Daoud and Triki (2013).

4.2.3. AIS and employees' work quality

The findings reveal respondents believed that AIS improves employees' quality of work during the COVID-19 pandemic. They show AIS reduces human errors and mistakes such as entering an invoice twice or mistakes in numbers. For example, interviewee No. 1 said, "In the system, if you put in any accounting information from purchasing 1145 to bank 1154 and you click done or post, it will not post, and it will show you that you have made an error; so in this case, the quality of accounting information will be higher". A further example, interviewee No. 10 stated, "AIS increases the quality of employees' work as it detects errors and prevents you from going on with your task before fixing or correcting the error that may be, for example, repeated invoice". This finding is consistent with previous studies such as Medina et al. (2014).

4.2.4. AIS and employees' efficiency

The findings indicate that almost all respondents agreed AIS increases employees' efficiency during the COVID-19 pandemic. AIS saves them time and effort in completing tasks compared to doing so manually, especially with the current COVID-19 pandemic and restrictions. One of the interviewees (No. 10) mentioned, "It is almost impossible for employees to get the job done without using accounting information system as they are working from home and this is their only available platform. AIS helps employees get more job done in less time, of course; that is due to the integrated models that ease up the process of doing many time-consuming works". Additionally, interviewee No. 4 said, "AIS increases employees' efficiency as it helps them to do more than one task at once because having integrated modules lower the time needed compared to doing the work manually". This finding is consistent with previous studies such as Medina et al. (2014).

4.3. The impact of AIS on the external auditing process

4.3.1. AIS and selection phase

The empirical findings showed that most interviewees agreed that AIS supports the selection phase of the external auditing process during the COVID-19 pandemic. For example, interviewee No. 3 stated, "AIS would make the selection phase very smooth and easy for us as auditors to select samples". Furthermore, interviewees highlighted that AIS would help identify the risky areas for an external auditor. As interviewee No. 1 clearly stated, "For the selection, the phase will for sure be easier, more representative sampling could be chosen while you take into consideration many risk factors in choosing your samples". This finding is consistent with previous studies such as Soudani (2012).

4.3.2. AIS and planning phase

The majority of interviewees documented that AIS enhances the process-planning phase of the external audit during the COVID-19 pandemic. They highlighted that using AIS would make it easier for auditors to get all the system's relevant information. For example, interviewee No. 6 pointed out, "For an accounting information system, it would be easy for the auditors to go straight to the reports they need and schedule their work to review the stuff in the system". That is, the validity of data will be increased, as interviewee No. 6 added, "Validity and consistency of the data will be higher, the completeness of the data will be higher, and the existence of the data will be higher". This finding is consistent with previous literature such as Geerts (2011).

4.3.3. AIS and execution phase

Other findings show that most interviewees agreed that AIS supports the execution phase of the external auditing process during the COVID-19 pandemic. For example, interviewee No. 4 highlighted, "The execution phase is also beneficial if the client is using AIS". Interviewee No. 3 added, "Entities that have a good accounting information system impacts them positively because it would help them move on and do not have things delayed". Moreover, the findings indicate that AIS can assist in the timely procurement of information required by the auditors. For example, interviewee No. 10 stated, "If the AIS is up and effective, it can help them with getting what they require from the auditee on time". This finding is consistent with previous studies such as Moffitt et al. (2018).

4.3.4. AIS and reporting phase

The analysis findings revealed that most interviewees pointed out that AIS would enhance the reporting phase during the COVID-19 pandemic. For example, interviewee No. 6 mentioned, "It will have a positive effect on the reporting process because I can produce reports using the AIS". Interviewees also pointed out that AIS generates reports and financial statements with no errors and mistakes. For example, interviewee No. 4 stated, "AIS generally helps you in the reporting phase of the external auditing process; because the management and the financial statements are being produced from that accounting information system". Interviewee No. 3 confirmed what interviewee No. 4 had stated by mentioning, "In the reporting phase it would have a positive impact since I can generate reports through the accounting information system". This finding is consistent with previous studies such as Hla and Teru (2015).

4.3.5. AIS and follow-up phase

The empirical findings showed that interviewees agreed AIS supports the follow-up phase of the external auditing process during the COVID-19 pandemic. For example, interviewee No. 9 stated, "If you have an automated system or an accounting Information system, you can do follow-up easily". Analysis of the findings also indicated that AIS saves time during this stage, thereby increasing efficiency. For example, interviewee No. 4 highlighted, "Doing it

manually will take much time. Accounting information system has a positive impact on the firm and employee performance, and the auditing process". This finding is consistent with previous studies such as Alles et al. (2018). Overall, the findings of this paper indicate that AIS has a more significant impact on employees' performance and the auditing process than on firms' performance. Interviewees agreed that AIS directly supports profitability during the COVID-19 pandemic, but AIS has no direct impact on cash flow, revenue and market share. Similarly, they reported that AIS enhances employees' productivity, effectiveness, and efficiency during the pandemic. They highlighted that AIS induces the selection, execution, and reporting phase of the external auditing process. Respondents believed that AIS would improve a firms' overall performance compared to a firm that does not utilize AIS as this is the age of digitalization. For example, interviewee No. 2 said, "A firm that does not make use of AIS is jeopardizing itself in terms of risks and controls".

Consequently, accounting information systems are one of a business's valued assets. A sound accounting information system will lead to efficiency, competency, and improved customer service. It will also facilitate the decision-making process for the organization. However, it is also essential that the company's administrators continuously support its accounting information systems utilization. Similarly, the investors/stakeholders could use the accounting information system in dealing with their accounts more effectively, rapidly, and suitably (Fatima et al., 2021). Hence, the accounting information system is also considered a device used by the management that provides accurate facts and figures of the company's accounts and helps the management make prompt and correct decisions.

5. CONCLUSION

This paper investigated the role of AIS in firms' performance, employees' performance, and the external auditing process during the critical COVID-19 pandemic. The interviews conducted with auditors have given the study a clear picture of the role of AIS. The empirical findings revealed that there is a direct impact of AIS on the overall firms' profitability during the COVID-19 pandemic. AIS would lead to substantial cost savings, helps make the process more comfortable and efficient, reduce human errors. In contrast, the findings showed that there is no direct impact on firms' overall cash flow/revenues during the COVID-19 pandemic. Cash flow depends on other factors such as the firms' operations, nature of the business, and external factors such as the global business environment. While the revenues depend on the firms' overall market share. In addition, the findings showed that AIS induced employees' productivity, quality of work, and efficiency during the COVID-19 pandemic. AIS allowed employees to increase their productivity, especially with the pandemic social distancing. Other findings showed that AIS enhanced employees' effectiveness. Furthermore, the empirical findings highlighted that AIS supports and enhances the external auditing process including selection, planning, execution, reporting, and follow-up phases during the COVID-19 pandemic.

Limitations of this research include the small sample size due to constraints on access to interviewees and limited time and resources. Therefore, a longitudinal study and larger sample size are recommended for future studies, as the former is capable of studying change and development while the latter increases accuracy and the extent of possible generalization. To enhance

the role of AIS further, this paper encourages future research to explore the role of AIS in other developed and developing countries. Moreover, other approaches such as mixed methods could be used to explore more on the role of AIS and its related opportunities and challenges to business firms.

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APPENDIX

Table A.1. Summary of previous empirical studies

Articles	Main themes		
	1 <i>AIS and firms' performance</i>	2 <i>AIS and employees' productivity</i>	3 <i>AIS and auditing process</i>
Prasad and Green (2015)	Findings reveal a positive relationship between AIS and firm performance.		
Grande et al. (2011)	They found a positive relationship between AIS and firm performance indicators in Spanish SMEs.	Results show no significant relationship between AIS and productivity.	
Onaolapo and Odetayo (2012)	Findings revealed a statistically significant between AIS and organizations performance.		
Popovič, Puklavec, and Oliveira (2019)	Results show a positive relationship between business intelligence and firm performance.		
Huerta and Jensen (2017)	They found AIS fuels organizational performance.		
Saira et al. (2010)	Findings revealed SMEs that make use increases the firm's performance.		
Muhindo et al. (2014)	Results show a positive relationship of AIS on profitability levels.		
Dangado and Rufai (2014)	They found AIS led to accurate reporting and organizational effectiveness.		
Ogah (2013)	Results show a negative relationship between AIS and performance and profitability.		
Hla and Teru (2015)	They found a positive relationship between AIS and firm performance across countries.		The use of AIS makes it possible to automate business operations including the audit function.
Soudani (2012)	They found AIS has a significant effect on firm performance.		AIS simplifies the accounting process and thus the auditing process.
Geerts (2011)			AIS is useful and positively impacts the accounting and auditing processes.
Alles, Brennan, Kogan, and Vasarhelyi (2018)			The use of AIS by firms has led to the development of automated auditing processes.
Moffitt, Rozario, and Vasarhelyi (2018)			Useful and constructive effects of AIS on accounting and auditing processes.
Amin, Munira, Azhar, Amin and Karim (2016)		The positive relationship between AIS and employee performance.	
Daoud and Triki (2013)		It was found that AIS impacts the effectiveness of employees positively.	
Fitrios (2016)		AIS positively impacts employee's effectiveness.	
Medina et al. (2014)		It was found that AIS positively impacts the quality of employee's tasks.	
Saganuwan et al. (2015)		The positive impact of AIS on employee productivity.	