

# THE IMPACT OF MANAGEMENT INFORMATION SYSTEMS ON ORGANIZATIONS BUSINESS PERFORMANCES, THE CASE OF SMEs IN GHANA

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## ABSTRACT

This paper critically examines the need for developing an empirical qualitative model for evaluating the impact of Management Information Systems on Organisations Business Performance, in the context Small and Medium Manufacturing and services related Enterprise of Ghana. The key emphasis is on the integration of the impact of management information systems on business performance using indicator variables. This paper shed lights on the worthiness of the research problems, its centric role and sizeable effects within the context of the Ghanaian economy. We use 19 semi-structured interview's qualitative data, using grounded theory, adopting quota sampling. The proposed empirical model is simple, practical, usable and customizable to other business industries.

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<sup>1</sup> *Comments are welcome.*

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## 1. INTRODUCTION

The last few decades have witnessed the spread of various types of Management Information system (MIS) and its influence in both public and private sector, at the international level. The growing body of literature indicates that the impact of MIS is positively related to the organisational business performance (Azeez and Yaakub; 2019; Turban et al., 2010; Stone et al, 2007; Pathak, Krishnaswamy and Sharma, 2019; Mirarchi et al, 2018; Kroenke, David, 2011; Laudon and Laudon, 2013; Kasasbeh, Abdel Karim, 2007).

In spite of these continuous developments, research of this effect in the emerging context remained relatively neglected, specifically in the context of Ghana, relatively very limited research were conducted, hence the paucity of research knowledge in terms of how MIS impacts the overall business performance. This limitation or the neglect is particularly complex and problematic given the central role MIS in the context of Small and Medium enterprise of Ghana, in turn, how its contributes to the economic performance (Diva-portal.org. 2020)

The proposed research aims to address the gap in the literature regarding the influence of MIS on business performance, the case of SMEs in Ghana. The SMEs are the backbone of the emerging Ghanaian economy, it represents 85% via the private sector, contribute about 70% to the private sector. Thus, this research has great implication on the Ghanaian economy and GDP (Diva-portal.org 2020).

Ghana's economy experiences a rapid but sustained expansion. World Bank predicts the annual Gross Domestic Product of Ghana is going to grow at 7% annually. Ghanaian economy was estimated to be the world's fastest-growing economy in 2019, by the International Monetary Fund (IMF). This indicates the importance of MIS and its needs for regulating consistent and beneficial outcomes of Ghanaian SMEs performance (Tradingeconomics.com, 2020; include World Bank. 2020).

As the SMEs highly manufacturing and services-oriented sector, the low level but large segment of workers are directly dealing with various MIS systems, via various avenues. Thus, how MIS influence the business performance among unique demographic workers setting requires thorough examination so that the work organisation can selectively utilize the best practices while regulating the impact of MIS on the business performance. The proposed research will contribute to the literature, ordinations and process focusing on the SMEs of Ghana in developing desirable practices and process to generate desirable business performance.

## 2. PURPOSE OF THE RESEARCH

To develop a performance-oriented model using qualitative data to examine the impact of MIS on business performance of Ghanaian SMEs. The research is focused on understanding the concepts and dimensions of MIS and its relationships with business performance. The study context is manufacturing organisations in the form of SMEs in Ghana. In order to develop the proposed empirical model, the researchers will collect primary data among 19 managerial workers who play an active role in the MIS domain in the Ghanaian enterprise. The structured interviews will be used as the primary mode of data collection; the collected data will be used to critically assess how MIS impacts business performance in the Ghanaian SMEs. To achieve the targeted research goals, the researchers adopt the following approach as below incorporated.

Objective 1: The researchers begin the critical analysis of both the global and local literature on MIS and its impact on business performance in the SMEs. This task has been carried out by utilizing sources such as Journals, published articles, Google Scholar, EBSCO.

Objective 2: This objective will be accomplished by collecting data on 19 managerial workers who play a vital role in handling management information systems to produce desirable organisational performance. As stated, the required data will be collected via the semi-structured interview; the collected data will be analyzed by using Nvivo software and Microsoft Excel.

Objectives 3 and 4: Adopting the methodology developed by the previous researchers, the research will investigate the impact of MIS on business performance using qualitative data in the Ghanaian SMEs. Once the barriers will have been identified, alternative methods/practices will be identified and their merits assessed to overcome those barriers.

## 3. KEY RESEARCH QUESTION

The researchers attempt to explore the key research question in this research which is- how is the impact of MIS on business performances in the SMEs of Ghana?

#### 4. CONTEXT AND THE BACKGROUND

The investment in Management Information Systems must always be considered when setting budgets by the top management. This can be achieved through research on customer trends, change in technology, the target audience, and the company's development plan (Karim, 2011). The return on investment of the system is also very crucial, where companies invest only in the systems they need. This chapter has mainly focused on the background study, the statement of the problem, research questions, identifying the aims and objectives of the research, how significant the study is, the study's scope, the limitations of the study, and the structure of the study.

Due to the poor integration between information systems and strategy, Ghana SMEs incur reduced profits as there are loopholes in the business operations, making the resources not fully maximized. The aim of this research is to develop an empirical model that examines the impact of management information systems on the business performance of Ghanaian SMEs. The researchers have adopted a qualitative approach. They will capture key themes directly and indirectly associated with the variables (a) Management Information System and (b) the business performance. For this purpose, the researchers adopt quota sampling (only selected manufacturing section of the SMEs).

For this purpose, the researchers will collect data using semi-structured interviews from 19 managerial IT workers employed. Researchers aim to capture the similarities and the differences in how MIS impacts business performances to conclude the accumulated impact. The distinct differences (how MIS does impact business performances differently in similar segments) add value to the existing paucity of the research literature about MIS and its accumulated impact in Ghana. Further, this research will contribute directly to the organizational decision-makers to regulate the key implications of MIS and utilize as a dependable technological tool to harvest beneficial outcomes. SMEs in Ghana are the backbone of the country's economy.

Ghana is the second-largest economy in West Africa; the SMEs are of great importance. Due to its good governance, rich natural resources, strong democratic institutions, and a highly rated business environment, Ghana's gross domestic product (GDP) by 2015 was 40 billion US Dollars. As of today, the Ghanaian GDP has reached about 65.56 billion USD (Tradingeconomics.com, 2018). Of the total GDP, the small and medium enterprises contributed 70% to the GDP. The sector which is largely privately owned employs approximately 85% of the working population (Moga, 2013). The growth of SMEs has led to the need for modern forms of technology, and this has in turn attracted foreign direct investment.

The international industries have identified the growth in the need for technology among SMEs in Ghana and they have tapped into that market diligently. Foreign players are partnering with local companies to share technology as well as develop international markets for locally produced goods (Faris, 2020). This study's findings will help SMEs in Ghana understand how to implement management information systems into their organizations and their impact on the overall performance of the business. There will also be an increase in job opportunities as the industries will

recruit IT experts who are well knowledgeable about the systems to manage the businesses' operations.

This study's purpose is to demonstrate how the management information systems influence the business performance of small and medium manufacturing and related services enterprise in Ghana. The researchers have selected Zoomlion Ghana Limited ([www.zoomlionghana.com](http://www.zoomlionghana.com)) and its subsidiaries as the purposeful sample to investigate this global phenomenon. The researchers will use qualitative data to examine the similarities and differences in terms of how MIS influences business performances, contextually. The study will cover in-depth theories associated with Management Information Systems and unravel them to show the facts and how the system operates to enhance the organization's smooth running.

## 5. RESEARCH PROBLEMS

Due to the poor integration between information systems and strategy, Ghana SMEs incur reduced profits as there are loopholes in the business operations, making the resources not fully maximized. The employment rate is also low because IT specialists who are completing their studies are not getting places to work as their work areas are not well put into place. Thus, many job seekers have specialized in IT and have nowhere to go. The business operations in Ghana are not speedy enough to go in line with the wide market economies. Therefore, there is slow economic development in Ghana. This economic shock applies to almost all developing countries, especially in Africa.

Today businesses mainly run using technologies; every external or internal interaction with clients and employees depends primarily on MIS. Management Information Systems is an integral part that includes the technologies and personnel required to run it (Faris, 2019). In Ghana, the high fixed costs and difficulty in accessing credit due to high-interest rates have made it difficult for businesses to invest and effectively implement MIS to streamline their operations (Karim, 2011). Relatively, the above-described challenges have undesirably impacted the implementation of various types of MIS and its impacts on profitability, in turn on the overall business performance.

In Ghana, specifically Zoomlion Ghana Limited, through its successful adaptation and implementation of MIS, has been able to streamline its core business operations and largely improved the business performances. The re-engineering or restructure of operations by MIS has ensured that the company has gained sustainable competitive advantages in the country. The services sector, comparatively producing greater output in the past although the size of the operation is small compared to technology-oriented manufacturing companies. Wholesale, retail-trade, hotels and restaurants are dominated by SMEs (Oecd.org. 2020).

The hiring and retaining of skilled employees to manage various types of management information systems have also been a great challenge. The Information Technology (IT) field has had the most job vacancies in the past decade. Still, with the development of IT infrastructure and rapidly changing technological development

make it more difficult, because, the skilled employees are attracted more towards working for mature countries, unlike the emerging economy, in the case of Ghana (Moga, 2013). Many organizations still find it difficult to have MIS specialists among their staff to ensure the system's smooth running of their business systems, arguably due to demanding pay-scale.

The integration of new technologies into the existing system has also posed a great challenge to integrating MIS into organizational strategies (Peppard and Ward, 2016). However, amid these challenges, businesses are slowly learning and coming up with ways to bring together both the MIS and the organization strategies to meet their business needs. Hence, the need to conduct further research on this topic to get why it is so difficult for most companies to integrate management information systems in their organizations and seek ways to improve this situation.

## 6. AIM AND OBJECTIVES

The aim of this research is to develop an empirical model that examines the impact of management information systems on business performance of Ghanaian SMEs.

### 6.1 Research Objectives

Following objectives are developed coherently in order to achieve the research aim.

- a) To review the existing literature both globally and locally on the impact of management information systems in SMEs' business performance in Ghana, such as Zoomlion Ghana Limited.
- b) To analyze the challenges faced by SMEs in the implementation of MIS and how those challenges could be mitigated by integrating AI capabilities.
- c) To develop a model that examines the impact of management information systems with business performance
- d) To provide recommendations to upcoming businesses regarding the effectiveness of the implementation of Management Information Systems and their impact on business performance.

## 7. REVIEW OF LITERATURE

Information is the data that has been collected, analyzed, and processed to ensure that it can be understood clearly. According to Haag and Cummings, (2012), Management Information Systems have evolved through five different eras which were defined by Kenneth and Aldrich Estel depending on the development of computers. However, according to Weed mark, (2019), the origin of Management Information Systems can be traced back to 1801, when Joseph Marie Charles came up with punch cards that were used in weaving machines to make elaborate patterns in cloth. The machines were hand-operated and one had to remember the sequence of threads to make a pattern. Joseph's punch card could automate the storage and management of the information used to make different patterns.

The development and evolution of computers also brought about the change in Management Information Systems from the use of punch cards to the most recent trend of cloud computing. Smartsheet, (2020), notes that process automation began with the use of punch cards to input and store outputs in the 1800s, to use of magnetic tapes like floppy disks, followed by optical media like compact discs that had larger storage, and lastly flash memory that is in use today. The development of calculation devices and software like VisiCalc and Microsoft Excel has also made accounting very easy. The understanding of the different forms of Management Information Systems by managers in an organization is very crucial to enhance proper implementation into the business vision and mission.

### 7.1 The utility of the MIS

The researchers include following indicator variables to capture the overall influence or utility or usefulness of the management information system namely (a) scope (b) value additions and (c) business support. These are viewed as the exogenous variables (incoming or independent variables) as far as the research is concerned.

#### a) Scope

The scope of this research is to satisfy all the information needs of the impact of a management information system on business performance. This will depend on the type of information provided. An MIS is good at providing regular formal information gleaned from normal commercial data (Karim, 2011; Economics Discussion, 2020).

#### b) Value addition

The impact of management information system has a good value addition on businesses. The addition of information system introduces to SMEs businesses have impacted greatly and raising the value of the business to some standards. Information management creates business value indirectly but creates business costs directly, making the evaluation and measurement of information management and the benefits thereof difficult for organizations (Karim, 2011; Turban, Efraim and Volonino, 2010).

#### c) Business Support

To what extent the management information system attempts to build competitiveness to support the business in terms of streamlining the core business operation (Karim, 2011; Turban, Efraim and Volonino, 2010). As the researchers

have already stated that the context here is specifically on manufacturing and manufacturing-related.

## 7.2 The business performance

Small and medium-sized enterprises are the backbone of Ghana's economic and social development for the past decades. They're the most important actuation for business development, employment creation, production of products and services in Ghana.

In this research, the utility of the management information system is related to business performance, the endogenous (dependent variable). The overall business performance is measured based on (a) Increase in Total Revenue (b) Gained Market share and (c) Profit margin.

### a) Increase in Total Revenue.

Producing total revenue is critically important for manufacturing organisation to determine their cash flow. Relatively, Increase in total revenue leads to many desirable business performance. Thus, the researchers attempt to establish the direct influence of the management information system on producing the total revenue (Laudon and Laudon, 2013; Pathak, Krishnaswamy and Sharma, 2019).

### a) Market Share

Market producing total revenue is critically important for a manufacturing organisation to determine their cash flow. Relatively, Increase in total revenue leads to much desirable business performance. Thus, the researchers attempt to establish the direct influence of the management information system on producing the total revenue (Laudon and Laudon, 2013; Pathak, Krishnaswamy and Sharma, 2019).

### b) Profit Margin

Market share is another vital key performance indicator which determines the business performance in most of the regions. This also enables the business sustainability or in other words, enables the organisations to consistently produce greater output and retain business performance. However, as researchers, we attempt to explore how the applicability of management information system, in turn, enables to develop market share by leveraging operational and business capabilities (Pathak, Krishnaswamy and Sharma, 2019).



### 7.3 Summary of Key Literature Synthesis

The below-incorporated table capture and synthesizes the key papers the researchers have reviewed in order to develop the nested fundamental model in section 7.0. The literature review is the fundamental basis in which the researchers build their hypothetical arguments, the relationship among the variables and key underlying assumptions.

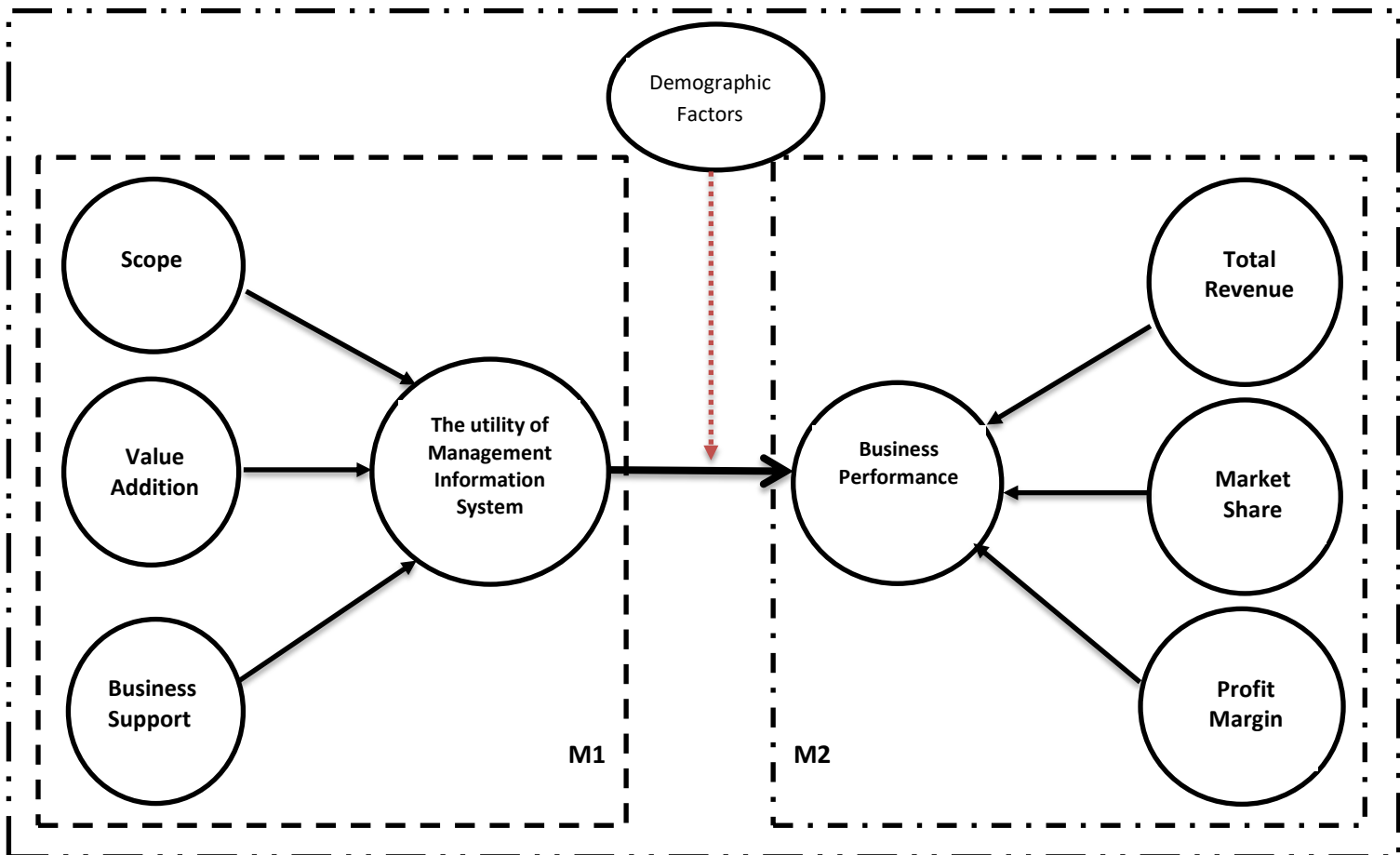
Authors, Year	Title	Aim	Methodology	Outcomes
Kebede, Mekonen; Adeba, Emiru; Mel ese Chego, 2020	The examination of of quality and use of health management information system in primary health care units of east Wollega zone, Oromia regional state, Ethiopia:	The aim was to explore the the quality of health management information system data and how impacts the overall operation of healthcare unit in terms of timeliness, completeness, and accuracy	Qualitative data were obtained from 16 participants via the focus group techniques.	The report indicates that the overall data readiness is below par, compared to the national standards.  Timeliness of report, registration completeness, report completeness, and data accuracy level of the selected facilities were 70, 78.2, 86, and 48%, respectively.
Sunil Pathak, Venkatara ghavan Krishnasw amy and Mayank Sharma, 2019	Impact of IT practices and business value of IT measurement	To measure the business value of IT (BVIT) and illustrate the relationship between IT practices and BVIT.	Case study approach to collect the subject firm data over a period of one year	The contribution of the work is manifold: illustration of the relationship between IT practices and BVIT; illustration of a methodology to evaluate firm-level BVIT; and an approach to collect IT expenses – both capital and operational level.
Mirarchi, Claudio; P avan, Alberto; De Marco, Francesco; Wang, Xiangyu; S ong, Yongze, 2018	Evaluated the feasibility to support the facility management process by integrating the end uses, using BIM-GIS technologies.	Developed a theoretical framework for developing digital facility management system using virtual models. This includes design-development of new work flow.	A case study was developed to identify the potential commercial partners to implement the technological model.	The framework allows the design-development of integrated systems to build operational advantages.

Dlodlo, Nomusa; Hamunyela, Suama, 2017	The Status of Integration of Health Information Systems in Namibia	assess the level of integration of IS in the Namibian health sector	the aims and objectives, research design, data collection, data analysis and the study protocol	although efforts have been initiated towards the integration of HIS in Namibia, a lot of ground is yet to be covered
Kalabokidis, Kostas; Ager, Alan; Finney, Mark; Athanasis, Nikos; Palaiologou, Palaiologos; 2016	AEGIS: The utility of a wildfire prevention and its management through a standardized information system.	Developed an empirical information system that can be used as a smooth decision support tool to best manage wildland fire hazards.	The collected data is retained and maintained into a reliable geographic databases (one database for each study area)  The data patterns were used as inputs to generate best possible predictions to forecast/anticipates wildlife behaviours.	The research utilized integration of various open source technologies to predict the wildlife behavioral patterns. This include cloud solutions too (e.g., OpenStack, Web-GIS solutions (e.g., Geoserver)
Choi, Myeonggil; Lee, Changan, 2015	Information Security Management as a Bridge in Cloud Systems from Private to Public Organizations	to develop a methodology for the information security management of cloud computing in public organizations and to validate the usefulness of this methodology.	The methodology classifies the importance of information security in cloud systems used in public organizations in terms of security. The importance of information is classified on the basis of the potential impacts of the information on a public organization	The proposed methodology is expected to lessen the security vulnerabilities of introducing cloud computing to public entities, resulting in an improved

## 7.2 Fundamental Model

The below incorporated nested diagram is derived from the existing literature. The researchers have developed the fundamental model which comprises of (a) exogenous (independent) (b) endogenous variables and (c) the impact. The exogenous variable – the utility of management information system is interpreted using three underpinning variables such as scope, value additions and business support. Likewise, how the utility of MIS impact the business performance (endogenous variable) is examined using three underpinning factors such as total revenue, market share and profit margin (Kothari, 2008).

Researchers' aims to capture the similarities and the differences in the perception of how MIS impacts the business performance based on the socio-cultural indicators, in order to conclude the accumulated impacts. This can be viewed as one of the key-value addition of this research.



*M1 and M2 are measurement models*

Figure 1 Demonstrates the fundamental nested model proposed in this research

## 8. PROPOSED METHODOLOGY

The researchers have adopted a qualitative approach. They will capture key themes directly and indirectly associated with the variables (a) Management Information System and (b) the business performance. For this purpose, the researchers adopt quota sampling (only selected manufacturing section of the SMEs). The data analysis technique used in this research is grounded theory; however, the researchers will use transcribing qualitative data using Nvivo to capture the existing and emerging themes.

For this purpose, the researchers will collect data using semi-structured interviews from 19 managerial IT workers employed only across the manufacturing sector of SME of Ghana.

## 9. KEY ASSUMPTIONS

Assumptions are the fundamental basis of research. Relatively, without those contextual assumptions, the research problems could hardly exist. Thus, the researchers explicitly state following assumptions that are directly or indirectly shape the mindsets of the researchers also will have a say on the data analysis, interpretation and the conclusions (next series).

- a) The targeted participants will provide sufficient data (quality data) about the influence of MIS on business performances.
- b) The managerial workers in the targeted sample will demonstrate an adequate understanding of MIS, the utility of MIS and business performance.
- c) The researchers will get timely approval from the targeted companies (human resource management) to attract the required interviews.
- d) The interviews will allow the researchers to record the interviews through feasible mechanisms.
- e) 19 qualitative interviews will suffice the data required for detailed analysis, interpretation and conclusion.

## 10. CONCLUSIONS

It was found using the pilot qualitative data that the impact of management information system in the manufacturing industry significantly impacts the business performance (the detailed analysis will be published in the next cut of the research paper). It means the influence of manufacturing and manufacturing-related MIS on business performance is viewed as the researchable, repeatable and realistic global phenomenon.

Further, it was identified, specifically, in Ghana, there is a greater emphasis on the utility of the manufacturing system in the manufacturing industry because of its ability to regulate the tangible outputs (products). In Ghana, 70% of the gross domestic product contribution comes from the private sector, mostly in manufacturing. Thus, the contextual or empirical disposition of this research is poised to explore the existing paucity of knowledge particularly the utility of the MIS and its impact on business performance in the emerging economic situation of Ghana. Thus, the necessity of the complex, broad and world-class management information system to regulate the manufacturing operations.

The organisation view the investment on MIS as a capital investment decision and wait arguably long term to break even. However, it challenging to interprets or translate the influence of MIS on the organisation using qualitative data. Thus, this research aims to develop a qualitative model which advocates the influence of MIS on business performance.

Finally, the researchers shed light on the feasibility of integrating the artificial intelligence capabilities to build the competitiveness of the MIS to enhance the beneficial outcomes for the organisation. On this basis, this research significantly contributes directly to the organisational decision-makers to regulate the key implications on MIS to generate business competitiveness and build performance both locally and internationally.

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## 11. APPENDIX – SEMI STRUCTURED INTERVIEW QUESTIONS ON MIS AND BUSINESS PERFORMANCE

Dear Respondent,

I would appreciate your assistance in responding to the questions below regarding our survey on the impact of MIS and its influence on Business Performance in the Ghanaian SMEs

### General Information

Email Address: \_\_\_\_\_

#### Gender

MALE

FEMALE

#### Age Range:

20-30

30-40

40-50

50-60

60-70

#### Nationality

Ghanaian

Expatriate:

#### Role:

Manager

Officer

**Number of year as Manager:**

1-5 years

5-10 years

10-15 years

15-20 years

20-30 years

**Highest Information Technology Educational qualification**

Diploma

Degree

Masters

PhD

**Specific Question**

1. Do you experience that the management information systems in your company impacts business performance? Explain?

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2. Why do you experience that broad-scope of management information systems in your company are essential? Explain?

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3. Why do you encounter value-addition of management information systems in your company essential? Explain?

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4. Why do you encounter the business support or helpfulness of management information system is essential is necessary?

5. Do you experience that the management information systems in your company positively impacts business the performance? Explain?

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6. Do you experience that the management information systems in your company impacts total revenue gained? Explain?

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7. Do you experience that the management information systems in your company impacts gaining market share? Explain?

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8. Do you experience that the management information systems in your company impacts gaining super profit margin? Explain?

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9. Do you experience that the management information systems positively impact the business performance of SMEs in Ghana? Explain?

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10. Do you see any emerging themes or new concept on management information systems which is important for the business performance of SMEs in Ghana? Explain?

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**Thank you for taking the time to respond to these interview questions**

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