

# The Impact of Management Information Systems on Educational Organisation Performance: Case Study at Namibian College of Open Learning

Rakkell Kanandjembo<sup>1</sup> and Asokan Vasudevan (PhD)<sup>2</sup>

<sup>1</sup>Open University Malaysia

<sup>2</sup>INTI International University and Colleges

**Abstract—** The purpose of this study is to help NAMCOL identify the impact of Management Information Systems (MIS) on organisation performance. In the competitive environment where organisations operate in, organisations need to evaluate the implementation of management information systems to quantify their impacts on the organisational performance. The study consisted of 33 employees from the supervisory and management cadre of Namibian College of Open Learning through a mixed method approach for data collection and analysis. The study found that there is a significant relationship between the three independent variables which are technology, organisation management and organisation structure with the dependent variable which is organisational performance. The ANOVA results for all three hypothesis tests show a significance level of 0.000 which means that the results for the organisation, technology, management and organisational performance have a positive significant relationship.

**Keywords—** Information Technology, Organisation Management, Organisation Structure and organisation Performance

## I. INTRODUCTION

It is evident that information, communication, and technology have transformed the way things are being done and it plays a vital role in education. Technology aids governments in the delivery of educational programs and in developing the programs. Data and information are important assets of an organisation and thus requires adequate administration and management for an organisation to reap the benefits. Management information systems are vital tools in organisations, they are required to manage the data and information in an organised and managed manner.

Educational institutions globally have implemented various strategies to manage and administer their teaching and learning data [1][2]. The study by [3] highlighted the importance and impact of management information systems on studies conducted at the universities in Turkey and Jordan. Similarly [4] emphasized that the role of management information systems has positive impact on the organisation's performance.

Despite the importance of management information system, organisations do not recognize all the aspect required to make a success out of its implementation. It is identified that the most important aspect that has been ignored or not provided

enough attention is the technology and people [2]. The lack of people's involvement is noted to have a negative impact on the system's performance. Furthermore, [4] indicated that a good management information system is planned, analysed, designed, deployed, managed, and continuously improved.

The Republic of Namibia government realized the importance of information technology in the educational sector. The government implemented a national policy to respond to Namibia's Vision 2030 objective of integrating ICT education and training into education and training systems [5]. The ICT Policy for Education [6] is focused on investigation and development of appropriate ICT solutions; deployment of ICT; maintenance and support of ICT; ICT Literacy; and ICT integration. In order to monitor and control the ICT environment managers must implement a monitoring and evaluation plan to measure the effect and efficiency of using ICT within the education sector [7]. Thus, the need for MIS in the supportive and administrative functions for an educational institution. The educational institutions in the Republic of Namibia have implemented management information systems at regional and national level with a purpose to centralised capturing and processing of data, uphold data quality assurance processes and the production of consistent and timely reports [8].

## II. RELATED WORKS

The study reviewed previous related works in several areas such as; organisational performance, MIS, technology, organisational structure and organisational management. Moreover, the researcher has reviewed underlying theories related with MIS impacts on educational institutions, factors associated with hypothesis development and conceptual frameworks in the current study domain.

### A. Organisation Performance

Organisation performance is termed by [9] as the ability to effectively implement strategies to achieve institutional objectives. As such, [10] alluded that by aligning business process management and corporate performance management strategic and operational activities the organisation can attain many benefits and in addition also improve organizational performance. Organisation performance is measured with

different models. The models are considered according to what variable of the performance structure is of interest. Performance measures are centric to input, activity, output, and the outcome [10].

### B. MIS

Information is crucial for running successful businesses in all sectors and thus need to be effectively managed [11] [12]. Educational institutions have shifted from the passive competitive arena where the government supported the educational institutions thus resulting in fewer efforts or minimal market forces to affect the institutions [13]. In the context of the current study, MIS definition is adopted from [14] [15] as an information system is a collection of interrelated components that collect, process, store, organize, retrieve, manage, and provide information to support business activities, decision making, and performance in an organisation.

From the researcher's experience, MIS is the type of information systems that take internal data from the system and summarize it to meaningful and useful forms as management reports to use in managerial decision making and management activities. From an educational institution's perspective, MIS as per [15] enables teaching, learning and administration. Similarly, [16] highlighted that MIS allow for the integration of university services. According to [17], MIS has a positive impact on the organization however there are challenges that can occur during the implementation and execution of the information systems.

### C. Technology

ICT plays an important role in the open and distance-learning environment since it tried to enhance the aspect of collaboration since the student and tutors are not physically together [18]. Technological equipment and solutions such as computers, emails, mobile phones, social media applications, radio and television can create the possibility of bridging the distance and contact between students, students and tutors, and students and content [19]. Besides the positive role of ICT in education, there are factors that pose threats to the success of integrating ICT in education [20] such as poor understanding of online pedagogy and learning styles, lack of administrative support.

### D. Organisational Structure

The structure of an organisation is made up of its people, structure, business process, politics and culture [21]. Organisational culture in terms of power-sharing, risk tolerance and learning are factors that affect the environment in which MIS is operated in [15] [22]. Therefore, the success of a management information system is conditioned upon its match with the organization culture [21].

### E. Organisational Management

Organisation management refers to the handling of the organisation and its employees. Organisation management

involves, planning, organizing, staffing, leading, control, time management, and motivation [23].

## III. METHODOLOGY

### A. Research Design

The study used the case study design, the case study is conducted at an open and distance education institution in Namibia. Case study is defined as an intensive, systematic investigation of a single individual, group, community, or some other unit in which the researcher examines in depth data relating to several variables [24] [25] [26]. Hence, it is deemed to use a case study approach in this research in order to maximize the accuracy of the data, transferability of the findings and to identify the central concepts and variables.

The study will adopt the mixed-method approach, which will allow explaining the scope of management information systems and their impact on NAMCOL's performance. As defined by [27], mixed methodology research collects, analyses, mixes and draws inferences from both quantitative and qualitative data in a single study or a program of inquiry for a comprehensive and in-depth analysis and understanding.

### B. Data Collection

This study utilised a questionnaire as a means of collecting the data. The Questionnaire is made up of three sections, which are demographics, factors affecting the performance of information systems, and perception towards management information systems. The questionnaire used the four-point Likert to assess the responses in section B. Four-point Likert scale: "1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). On the other hand, there is a subsection in this questionnaire assessing the managers by a 3-point Likert scale, where 1= Often, 2 = Sometimes, 3 = Never, to rate their frequency on data and information systems.

The study focuses on all departments, divisions and regional operational supervisors or coordinators, middle and executive managers at the different NAMCOL campuses across the country. This represents 49 staff members of the entire NAMCOL population.

## IV. CONCEPTUAL FRAMEWORK

The proposed conceptual framework to investigate the impact of MIS on NAMCOL's performance is defined below. The study consists of four independent variables, which are technological factors, structural factors, and management that form part of the Management Information System. The dependent variable is organization performance. Based on the conceptual framework in Fig. 1 three hypotheses are derived from as follows; **H1**: There is a positive and significant relationship between technological factors and organizational performance; **H2**: There is a positive and significant relationship between structural factors and organizational performance and **H3**: There is a positive and significant relationship between management and organisational performance.

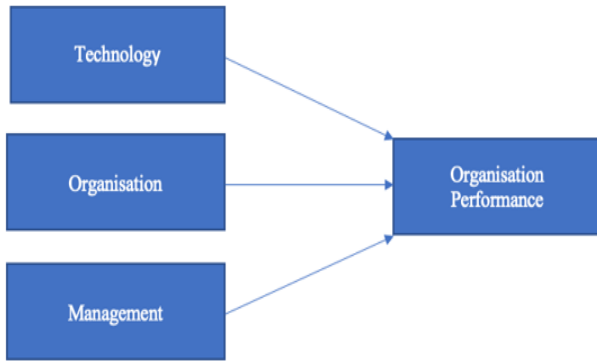


Fig. 1. Conceptual Framework

V. RESULTS

A. Pilot study results

The questionnaire consists of three sections. Section A have questions/fields about the respondent’s biographical information such as gender, age, department, and role. The purpose of section A is to collect information that will aid in the understanding on the demographic features of the participants. Section B focused on the independent and dependent variables whilst Section C focused on the perception of the participants. In addition to the questionnaires the researcher conducted an observation on the environment in which the management information systems are operated in.

Fifteen questionnaires were distributed via email for the pilot study. Five completed questionnaires were received via sealed envelopes and three were received via email, making the total of eight respondents. Five completed questionnaires were received via sealed envelopes and three were received via email, making the total of eight respondents. From the five that were received via sealed envelopes, two of the participants completed their questionnaires in the presence of the researcher because they felt they could not respond to the questions on their own. The reliability of the questionnaire was concluded with a .937 value of Cronbach’s Alpha for eight (8) staff members. The result showed that the instrument is reliable.

B. Hypothesis Findings

The management information system’s relationship with organisations performance was measured with the different information systems that has been implemented by the College. The study’s goal is to investigate the impact of MIS on the organisation performance. The study used three dimensions of information systems namely; technology, management and organisation.

*H1: There is a positive and significant relationship between technological factors and organisational performance*

The Cronbach alpha value of 0.9 was found for the 23 items and found between the Technology and Organisation

performance factors. The Cronbach alpha is more than the acceptable level of  $\alpha= 0.7$  indicating that the items are reliable making the test internally consistent. Furthermore, sig equals to 0.000 means that the model is within the acceptable statistical significance of less than 0.05. The ANOVA results are shown in TABLE I.

TABLE I. ANOVA RESULTS FOR TECHNOLOGICAL FACTORS

		Sum of Squares	Df	Mean Square	F	Sig
Between People		95.082	31	3.067		
Within People	Between Items	63.644	22	2.893	7.881	.000
	Residual	250.356	682	.367		
	Total	314.000	704	.446		
Total		409.082	735	.557		

*H 2: There is a positive and significant relationship between organisation factors and organizational performance*

The Cronbach alpha value of 0.9 was found for the 15 items and found between the Organisation structure and Organisation performance factors. The Cronbach alpha is more than the acceptable level of  $\alpha= 0.7$  indicating that the items are reliable making the test internally consistent. The ANOVA results show a significance level of 0.000 which means that the results for the organisational and organisational performance have a positive significant relationship resulting in the hypothesis being accepted or supported. The ANOVA results for H2 is presented in TABLE II.

TABLE II. ANOVA RESULTS FOR ORGANISATIONAL FACTORS

		Sum of Squares	Df	Mean Square	F	Sig
Between People		114.461	32	3.577		
Within People	Between Items	24.897	14	1.778	6.500	.000
	Residual	122.570	448	.274		
	Total	147.467	462	.319		
Total		261.927	494	.530		

*H 3: There is a positive and significant relationship between management and or-ganisation performance*

The Cronbach alpha value of 0.9 was found for the 31 items and found between the Management and Organisation performance factors as shown in Table III. The Cronbach alpha is more than the acceptable level of  $\alpha= 0.7$  indicating that the items are reliable making the test internally consistent. The ANOVA results in Table 111 shows a significance level of 0.000 which means that the results for the management and organisational performance have a positive significant relationship resulting in the hypothesis being accepted or supported. TABLE III presents the ANOVA results.

TABLE III. ANOVA RESULTS FOR MANAGEMENT FACTORS

		Sum of Squares	Df	Mean Square	F	Sig
Between People		171.984	32	5.375		
Within People	Between Items	162.151	30	5.405	17.918	.000
	Residual	289.591	960	.302		
	Total	451.742	990	.456		
Total		623.726	1022	.610		

VI. CONCLUSION

The study investigated management information system factors that has influence on the organisation performance. The study focused on three dimensions of information systems to identify the effect on the organisation performance. The study has achieved the research objectives. The study findings show that technological, organisation and management factors are vital parts of the management information systems. The study found that the three dimensions have direct relations with organisation performance. Moreover, the study discovered that the managers at Namibian College of Open Learning have a positive attitude towards organisation performance because the management information system impacts the institutions performance. Management information systems are important contributors to organisation performance. This study can be a reference for future researchers in management information systems in educational institutions.

ACKNOWLEDGMENT

The authors would like to offer special gratitude to Namibian College of Open Learning (NAMCOL) for the opportunity to conduct research and to publish the research work. In particular, the authors would like to thank NAMCOL staff members for their contribution to this research work.

AUTHORS AND AFFILIATIONS

1. Rakkell Kanandjembo is a Master of Management at Open University Malaysia. She is currently an IT Manager at Namibian College of Open Learning. In addition she graduated Bachelor of Computer Science (Honours) in Software Engineering from the Namibian University of Science and Technology.
2. Asokan Vasudevan (PhD) is a Senior Lecturer at INTI International University & Colleges. He is Doctor of Philosophy in Business Management.

REFERENCES

[1] S. Ghavifekr, and W.Rhosdy, "Teaching and learning with technology: Effectiveness of ICT integration in schools," International Journal of Research in Education and Science (IJRES), Vol. 1, No. 2, pp. 175-191, 2015. [Online]. Available: <https://doi.org/10.21890/ijres.23596> [Accessed: 03 May 2018].

[2] K.Sastry, "Management information systems for higher education institutions: Challenges and opportunities. Quality Management Implementation in Higher Education: Practices, Models, and Case Studies", 2019, [Online]. Available: <https://doi.org/10.4018/978-1-5225-9829-9.ch006> [Accessed Dec. 01, 2019]

[3] J. Bani-Hani, N. Al-Ahmad, and F. Alnajjar "the Impact of Management Information Systems on Organizations Performance: Field Study at Jordanian Universities," Review of Business Research, Vol. 9, No.17, pp.127-137, 2009. [Online]. Available: <http://ezproxy.library.uvic.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=45462891&site=ehost-live&scope=site> [Accessed: 03 May 2017]

[4] A. Khresat, "the Effect of Management Information system on Organisational Performance: Applied study on Jordanian Telecommunications Companies", Information and Knowledge Management, Vol.5, No.6, pp.45-50, 2015. [Online]. Available: <https://pdfs.semanticscholar.org/9f7b/163a23001b3628f1c02c86346f21652b8b95.pdf>. [Accessed: 16 June 2019]

[5] Office of President, "Vision 2030: A vision for Namibia," [Online]. Available: <https://www.namibiahc.org.uk/perch/resources/pdf/vision-2030.pdf> [Accessed: Dec. 01, 2017].

[6] Ministry of Basic Education and Culture, "ICT Policy for Education", 2004. [Print].

[7] Ministry of Education, "ICT Integration for Equity and Excellence in Education", 2005. [Online]. Available: [http://www.moe.gov.na/files/downloads/155\\_Published%20ICT%20Policy%202005%20-%2015%20March%202005.pdf](http://www.moe.gov.na/files/downloads/155_Published%20ICT%20Policy%202005%20-%2015%20March%202005.pdf) [Accessed: Nov. 14, 2018]

[8] EMIS, "Education Statistics in Namibia in 2017," 2018. [Online]. Available: [http://www.moe.gov.na/files/downloads/d15\\_EMIS%20Education%20Statistics%202017%20-%20web%20quality.pdf](http://www.moe.gov.na/files/downloads/d15_EMIS%20Education%20Statistics%202017%20-%20web%20quality.pdf) [Accessed: Nov. 14, 2018]

[9] B. Almatrooshi, B. Singh, S. Farouk, S. Burgess and T. Heap, "Determinants of organizational performance: a proposed framework," International Journal of Productivity and Performance Management, Vol.65, No.1, pp 844-859, 2016. [Online]. Available: [https://www.researchgate.net/publication/304488243\\_Determinant\\_s\\_of\\_organizational\\_performance\\_a\\_proposed\\_framework/citation/download](https://www.researchgate.net/publication/304488243_Determinant_s_of_organizational_performance_a_proposed_framework/citation/download) [Accessed: May 31, 2017].

[10] D.Vucec, S. Ivancic, and L. Glavan, "Interdisciplinary Description of Complex Systems", 2019, [Online]. Available: <http://eds.a.ebscohost.com/newdc.oum.edu.my/eds/pdfviewer/pdfviewer?vid=1&sid=6c7942d3-27f1-4a0c-ad86-8ed00d0b2cf0%40sdc-v-sessmgr03> [Accessed Dec. 01, 2019]

[11] M.Nalwoga and M.Dijk, "Organisational performance measurement models, also for poverty alleviation.," International Journal of Water, Vol.10, No. 122, pp. 122-138, 2016. [Online]. Available: [https://www.researchgate.net/profile/Meine\\_Van\\_Dijk/publication/299502217\\_Organisational\\_performance\\_measurement\\_models\\_also\\_for\\_poverty\\_alleviation/links/5706120408ae13eb88b98192/Organisational-performance-measurement-models-also-for-poverty-alleviation.pdf](https://www.researchgate.net/profile/Meine_Van_Dijk/publication/299502217_Organisational_performance_measurement_models_also_for_poverty_alleviation/links/5706120408ae13eb88b98192/Organisational-performance-measurement-models-also-for-poverty-alleviation.pdf) [Accessed: Feb.3, 2017].

[12] S. Pavkov, P. Posic and D. Jaksic, "Business Intelligence Systems Yesterday, Today and Tomorrow – an over-view," Zbornik Veleucilista u Rijeci, Vol.4, No.1, pp. 97-108. 2016. [Online]. Available: <https://hrcaj.srce.hr/160236>. [Accessed: Apr. 20, 2017]

[13] C. Campbell and T.J. Fogarty, "Behind the Curve: Higher Education's Efforts to Implement Advanced Information Systems," Journal of Emerging Technologies in Accounting, Vol.415, No.2, pp. 77-91. 2018. [Online]. Available: <https://doi.org/10.2308/jeta-52237> [Accessed: 31 January 2019]

[14] Y.H.Al-Mamary, A. Shamsuddin and A.Aziati, "Factors Affecting Successful Adoption of Management Information systems in Organisations towards Enhancing Organisation Performance," American Journal of Systems and Software, Vol.2, No.5, pp. 121 – 126. 2014. [Online]. Available: <http://pubs.sciepub.com/ajss/2/5/2> [Accessed: Sept. 10, 2016]

[15] G.D. Yadeta, "Role of Management Information System in Business Organisations.," in Proc. Academics World 18th International Conference, 28 January 2018, Boston, USA.



- [Online]. Available: <https://www.skylineuniversity.ac.ae/pdf/information-system/INFORMATION%20SYSTEMS%20FOR%20MODERN%20MANAGEMENT.pdf> [Accessed: May 31, 2019]
- [16] A. Samer and M.Rawan, "Evaluating the Role of Management Information System Characteristics in Managerial Decision-Making: A Study of Mutah University," *International Journal of Academic Research in Business and Social Sciences*, Vol.8, No.5, pp. 185-196, 2018. [Online]. Available: <http://dx.doi.org/10.6007/IJARBS/v8-i5/4094> [Accessed: Feb.3, 2019].
- [17] O. Morariu, C. Morariu and T.Borangui, "Policy-based Security for distributed manufacturing execution systems," *International Journal of Computer Integrated Manufacturing*, Vol.31, No.3, pp. 58-82, 2018. [Online]. Available: <https://doi.org/10.1080/0951192X.2017.1413251> [Accessed: Feb.3, 2019].
- [18] J. Mayanja, A. Tibaingana and P.M. Birevu, "Promoting Student Support in Open and Distance Learning using Information and Communication Technologies," *Journal of Learning for Development*, Vol.6, No.2, pp. 177-186, 2019. [Online]. Available: <https://jl4d.org/index.php/ejl4d/article/download/360/407?inline=1> [Accessed: Feb.3, 2020].
- [19] G. Vasudevaiah, "Promoting usage of ICT in Open and Distance Education Programs," *The International Journal of Indian Psychology*, Vol.3, No.3, pp 77-79, 2016. [Online]. Available: [https://books.google.com.na/books?id=54OhDAAQBAJ&pg=PA80&lpg=PA80&dq=Vasudevaiah+\(2016\)&source=bl&ots=mR1pBoO3cM&sig=ACfU3U1X6ZGFgGdantmPlx8HIT0LcH-ZiA&hl=en&sa=X&ved=2ahUKewiqxceShcPIAhVPe8AKHZM7C\\_QQ6AEwAXoECAkQAQ#v=onepage&q=Vasudevaiah%20\(2016\)&f=false](https://books.google.com.na/books?id=54OhDAAQBAJ&pg=PA80&lpg=PA80&dq=Vasudevaiah+(2016)&source=bl&ots=mR1pBoO3cM&sig=ACfU3U1X6ZGFgGdantmPlx8HIT0LcH-ZiA&hl=en&sa=X&ved=2ahUKewiqxceShcPIAhVPe8AKHZM7C_QQ6AEwAXoECAkQAQ#v=onepage&q=Vasudevaiah%20(2016)&f=false) [Accessed: Aug. 31, 2018].
- [20] S. Palvia, P. Gupta, P. Mahapatra, D.Parida, R.Rosner and R. Sindhi, "Online Education: Worldwide Status, Challenges, Trends and Implications," *Journal of Global Information Technology Management*, Vol. 21,No.5, pp.233-241. 2018. [Online]. Available: <https://doi.org/10.1080/1097198X.2018.1542262> [Accessed: Sept. 10, 2019]
- [21] K.C.Laudon and J.P. Laudon "Management Information Systems 13 Edition", 2014, [Online]. Available: [http://dinus.ac.id/repository/docs/ajar/Kenneth\\_C.Laudon,Jane\\_P\\_.Laudon\\_-\\_Management\\_Information\\_Sysrem\\_13th\\_Edition\\_.pdf](http://dinus.ac.id/repository/docs/ajar/Kenneth_C.Laudon,Jane_P_.Laudon_-_Management_Information_Sysrem_13th_Edition_.pdf) [Accessed Dec. 01, 2017]
- [22] S.W. Nene and A.S Pillay, "An Investigation of the Impact of Organisational Structure on Organisational Performance," *Financial Risk and Management Reviews*, Vol.5, No.1, pp.10-24, 2019, [Online]. Available: <https://doi.org/10.18488/journal.89.2019.51.10.24> [Accessed: May 31, 2020]
- [23] P.Juneja, "Organisation Management – meaning, Needs and its Features", 2015, [Online]. Available: <https://www.managementstudyguide.com/organization-management.htm> [Accessed Dec. 01, 2017]
- [24] R. Heale and A.Twycross, "What is a case study?," *Evidence-Based Nursing*, Vol.21, No.1, pp.7-8, 2018, [Online]. Available: <https://ebn.bmj.com/content/ebnurs/21/1/7.full.pdf> [Accessed: May 31, 2020]
- [25] J. Gustafsson, Single case studies vs. multiple case studies: a comparative study. [Literature Review]. Halmstad: Halmstad Univ., 2017. [Online]. Available: <https://www.diva-portal.org/smash/get/diva2:1064378/FULLTEXT01.pdf>
- [26] S.R. Ponelis, "Using interpretive qualitative case studies for exploratory research in doctoral studies: A case of information systems research in small and medium enterprises," *International Journal of Doctoral Studies*, Vol.10, pp.535-550, 2015, [Online]. Available: <http://www.informingscience.com/ijds/Volume10/IJDSv10p535-550Ponelis0624.pdf> [Accessed: May 31, 2017]
- [27] F. Almeida, "Strategies to Perform a Mixed Methods Study," *European Journal of Education Studies*, Vol.5, No.1, pp.137-151, 2018, [Online]. Available: <https://www.researchgate.net/publication/329402482> [Accessed: May 31, 2020]