UNIVERSITY TEACHERS' AWARENESS OF ARTIFICIAL INTELLIGENCE PROGRAMS AT THE UNIVERSITY LEVEL

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Abstract

This study focuses on investigating the utilization of Artificial Intelligence (AI) within Educational Management Information Systems (EMIS) at the university level, with a specific focus on HEC-recognized universities in Pakistan. The objectives included the identification of EMIS components and assessing awareness and usage of AI-based programs. A sample of 182 professors participated in the study, providing data through a three-point rating scale administered via Google Docs. Statistical analysis revealed varying levels of awareness and usage across different EMIS components. Findings indicate significant awareness among respondents, particularly regarding admission, educational, and library management systems. However, usage rates varied, with systems like classroom and course management showing higher utilization. This study underscores the importance of enhanced implementation and awareness initiatives to maximize the potential of EMIS and AI in improving educational management in Pakistan's universities.

Keywords: educational management, admission management, library information system, and artificial intelligence.

Introduction

In this research, we are assessing the awareness of emerging challenges in higher education. Emerging technologies are rapidly transforming the educational landscape. Our objective is to ensure that our university faculty are well-informed about these emerging challenges in higher education. Specifically, we are examining the use of various educational programs, including Artificial Intelligence (AI) applications in higher education, and several management information systems: Admissions Management Information System, Human Resource Management Information System, Examination Management Information System, Classroom Management Information System, Course Management Information System, Student Management Information System, Library Management Information System, Employee Management Information System, Financial Management Information System, and Learning Management System. This research was conducted in universities recognized by the Higher Education Commission (HEC) in Pakistan. The respondents included university faculty, vice-chancellors, and heads of departments. The data collected provided insights into the awareness of educational information systems, library information systems, and admission information systems among the respondents. The purpose of this research is to assess the awareness of emerging challenges in the future of higher education in Pakistan

Literature review

Artificial Intelligence (AI) is a novel technology that mimics human intelligence by utilizing machine learning algorithms, neural networks, and natural language processing (NLP). AI is transforming various industries, including healthcare, finance, and manufacturing. In recent years, AI has also made strides in the field of education, particularly in educational administration. AI can enhance the learning process, improve student outcomes, and automate administrative tasks. The application of AI in educational administration is still in its early stages, but it has already shown promising results. For example, AI-powered learning systems can personalize the learning experience for students,

provide real-time feedback, and identify potential issues. Similarly, AI can assist educators in identifying students' strengths and weaknesses, enabling them to tailor their teaching methods accordingly. However, the use of AI in educational administration also raises several ethical, legal, and social issues. For instance, AI in education may exacerbate potential biases and discriminatory practices, raise concerns about privacy, and impact the labor market. Therefore, exercising caution in the implementation of AI in educational administration is crucial. (Igbokwe, 2023).

The term educational administration refers to the processes of planning, organizing, directing, and controlling (human, financial, physical) actions within educational institutions to achieve specific goals and objectives. It encompasses various activities such as curriculum development, teacher training, student assessment, and school budgeting. Educational administration is essential to ensure the provision of quality education by educational institutions in an efficient and effective manner. Bush and Glover (2014) argue that educational administration is a vital field of study that assists educational institutions in fulfilling their goals and objectives. The authors suggest that the use of appropriate administrative techniques and tools, such as strategic planning, performance management, and financial management, is necessary for effective educational administration. Leadership is a crucial aspect of educational administration. Leithwood, Seashore Louis, Anderson, and Wahlstrom (2004) assert that effective leadership is essential for the success of educational institutions. The authors argue that effective leaders create a vision for the institution, establish clear goals and objectives, prepare and support a competent staff, and foster a positive school culture. Teacher development is another important aspect of educational administration. Darling-Hammond and Richardson (2009) discussed the role of teacher development in enhancing student success. They suggest focusing on programs for teacher development, improving pedagogical practices, fostering ongoing collaboration and feedback, and promoting cooperation among teachers. (Igbokwe, 2023). An Educational Management Information System (EMIS) can be defined as "a system for collecting, integrating, processing, maintaining, and disseminating data and information at all levels of an educational system for decision-making, policy analysis and formulation, planning, monitoring, and management. It is a system of people, technology, models, methods, procedures, rules, and regulations working together to provide educational leaders, decision-makers, and managers at every level with a comprehensive, integrated set of relevant, reliable, unambiguous, and timely data and information to assist them in fulfilling their responsibilities" (UNESCO, 2008: 101).

With the rapid pace and changes in our educational processes, the management of information in educational institutions is part of the organization's functions and responsibilities. As various authors have defined the Management Information System, it all boils down to how an institution or organization endeavors to organize and manage data and translate it into information. The world relies heavily on information, as the group Helal et al. (2021) noted that EMIS has become a crucial component of our daily lives. In the context of education, EMIS simultaneously supports and assists school development. Depending on the level of the educational institution, most information can significantly impact how the administration will operate and enhance its services. (Asio, J. M. R., Leva, E. F., Lucero, L. C., & Cabrera, W. C. 2022).

The EMIS have been widely used in Latin America (eg Colombia, Chile and Mexico) of which have been experiences of successes and failures. Here are some of these cases (Cassidy, 2005). Colombia (1999 - 2003) The use of information technology enabled them to bring significant financial savings and open 240,000 places in schools, of which 120,000 were the result of efficiency, and did not require hiring more teachers. Also, the website of

Mexico City provides geographic information, but it is not easy to use, besides that the help and information are very limited. Chile in the 80s developed a system that facilitates the presentation and analysis of results allowed the comparison between schools in the municipalities. Provides detailed reports to compare the performance between schools within the community, region or nation. It is also possible to compare schools based on the socio-economic state of the community receiving the service. Additionally, some states in Mexico have developed and maintained their own systems for educational planning. (Echeverría, M. A. M., Santana-Mancilla, P. C., & De la Rocha Cazares, V. M. 2012).

Overview of education management information system

Several studies have demonstrated the great potential and effectiveness of EMIS on various occasions. For example, in the case of the application, the group of Kiswara (2021) validated the comprehensive use of EMIS in learning. This approach will improve educational standards, upgrading both teachers and students. However, although the purpose of such an activity is excellent and beneficial, there are still some instances where the application of EMIS is not well understood.

In Chelonga's (2019) study, it has been indicated that there is no clear understanding regarding the application of Educational Management Information Systems (EMIS) in the library section. Therefore, although it seems that EMIS is a practical tool that can function in any way, there are some misconceptions and challenges. The author recommends promoting understanding, especially in rapidly changing environments, to fully utilize EMIS's capabilities. Furthermore, Halal's team (2021) discovered that EMIS is a management of worrying data and information, accessible to individuals who can access, process, analyze, and disseminate it. However, relevant documents have recommended various solutions and resources to incorporate and utilize EMIS according to its full potential, benefiting institutions greatly. For instance, Akinwole et al. (2019) advised training and retraining for EMIS users to enhance their capabilities. On the other hand, Ali et al. (2021) suggested that for effective utilization of EMIS data at the top and middle management levels, substantial human and financial resources are necessary. Ugwude and Ugwude (2020) recommended solutions to challenges by implementing EMIS, such as seeking assistance and involving stakeholders, raising awareness of EMIS benefits, and organizing seminars and conferences on EMIS for teachers and school administrators. EMIS is prevalent in higher education data and information systems, especially in educational institutions. Implementation and storage on its platforms are essential. Nowadays, top educational institutions are awaiting the implementation of comprehensive educational management solutions to synchronize operations and provide students with a cohesive experience (Barker, 2021). An article by Martinez et al. (2019a) revealed that in higher education, integrating educational management information systems allows for the creation of relevant, organized, and structural information systems in a multifaceted and complex work environment for schools and students. This need is apparent for institutions. However, from the vast literature, no one has paid attention to the context of student success (Martinez et al., 2019a). In 2019, Bravo's team affirmed their intention to broaden awareness about the significance of Education Management Information Systems (EMIS) for accountability in higher education institutions. The article estimated the relationship between Quality Management (QM), EMIS usage, and accountability. Inspectors found a close correlation between reviewed documents. Consequently, we sense the importance of EMIS along with other factors of the institution, such as quality management and accountability, which runs through every employee striving towards the institution's defined goal (Asio et al., 2022).

EMIS securely stores important data for learners such as personal information, examination records, and library details. It also monitors the daily progress of learners, which

is eventually used to analyze and monitor improvements or setbacks in students over time (Bilram, 2018). Similarly, EMIS is helpful in organizing the overall functioning of schools, enhancing programs' effectiveness, making teaching practices and learning environments more professional, enabling teachers to exchange their experiences in a more organized manner, working in teams, and meeting the needs of learners (Gurr & Pegler, 2014).

In addition, Telem and Buvitski's depth (2014) reference that EMIS facilitates the execution of duties, performance, impact, and capacity building of school managers and other staff. EMIS aids in tracking attendance and performance. Another significant aspect is that EMIS reduces the workload on teachers by providing instant access to data of any group of learners or learners, which can be drilled down, filtered, and arranged according to their preferences (Bilram, 2018). Moreover, according to the author, EMIS makes it easy to track and analyze the distribution and expenditure of resources. Furthermore, the administration can fully control which teachers and staff have access to what type of data, and the data on learners' financial records and educational performance can be a barrier from the staff's perspective (Ugwude and Ugwude, 2020).

It has been observed that EMIS is not fully utilized in the educational sector of Nigeria. Although most institutions have adopted information systems to manage records and sensitive information, but at the educational level, most institutions are yet to embrace technology associated with record-keeping. It seems that in Nigeria, the poor state of Education Management Information System primarily stems from the inadequate educational information management system (Ona, 2016). The issuance of IC certificates and transcripts also presents challenges for organizations and agencies in verifying their educational records in Nigerian educational institutions (Taiwo & Okwor, 2021).

Statement of the problem

This study aimed at "University Teachers' Awareness of Artificial Intelligence Programs at the University Level"

Objective of the study

Following was the objective of the study:

• To identify the educational management information system at the university level.

Research question

Following was the research question of the study:

What is artificial Intelligence based programs used in higher education?

Significance of the study

The study has a distinct value as it will critically study the emerging challenges to higher education and its future in Pakistan.

Delimitations

- The topic was broad and required extensive time for analytical study. Due to time constraints, the research was limited to HEC-recognized universities in Pakistan.
- The study was delimited to the 182 HEC-recognized universities.
- The study was further delimited to Vice-Chancellors, Professors, and Associate Professors in all disciplines.

Methods and procedures

Population

All Vice-Chancellors, Professors, and Associate Professors were selected based on the informed consent of the Vice-Chancellors of the universities.

Sampling

A total of 182 university teachers were selected as the sample for the study from all HEC-recognized universities in Pakistan.

Research Tool

A three-point rating scale was prepared for the university teachers. Senior Professors checked the validity and reliability of the questionnaire. After trying out the questionnaire, senior Professors provided guidance and suggested minor changes to the questionnaire for the study.

Methods and procedure

Relevant literature was reviewed to identify programs related to educational management information systems. Based on this literature review, a three-point rating scale was constructed containing the following main categories.

- Admissions Management Information System
- Human Resource Management Information system
- Examination Management Information System
- Classroom Management Information System
- Course Management Information System
- Student Management Information System
- Library Management Information System
- Employee Management Information System
- Financial Management Information System
- Learning Management System

Data collection and analysis

Data was collected, tabulated, interpreted, and analyzed in terms of percentages. Conclusions were made accordingly, and recommendations were also put forth.

Data collection

The rating scale was administered via Google Docs by the researchers to all the respondents included in the sample. Almost all the Vice-Chancellors were cooperative.

Data analysis

The data was tabulated and statistically analyzed using percentages and standard deviations, which are presented below.

Table

What is artificial intelligence-based programs used in higher education?

Sr. No	Educational Information System	Management	Have No idea	Have Heard about	Have used	Total	Mean
1	Admissions Information System	Management	30 (17%)	89 (51%)	55 (32%)	174	2.14
2	Human Resource Information system	Management	28 (16%)	105 (60%)	42 (24%)	175	2.13
3	Examination Information System	Management	23 (13.14%)	76 (43.42%)	76 (43.42%)	175	2.30
4	Classroom Information System	Management	28 (16.18%)	63 (36.41%)	82 (47.49%)	173	2.31
5	Course Management Information		31	49	92	172	2.35

	System	(18%)	(28.48%)	(53.48%)		
6	Student Management Information System	27 (15.69%)	62 (36.04%)	83 (48.25%)	172	2.32
7	Library Management Information System	28 (16.18%)	94 (54.33%)	51 (29.47%)	173	2.13
8	Employee Management Information System	35 (20.23%)	94 (54.33%)	44 (25.43%)	173	2.05
9	Financial Management Information System	40 (23.39%)	102 (60%)	29 (17%)	171	1.93
10	Learning Management System	26 (15.20%)	58 (34%)	87 (50.87%)	171	2.35

Mean is 2.201

Graph: Educational management information system
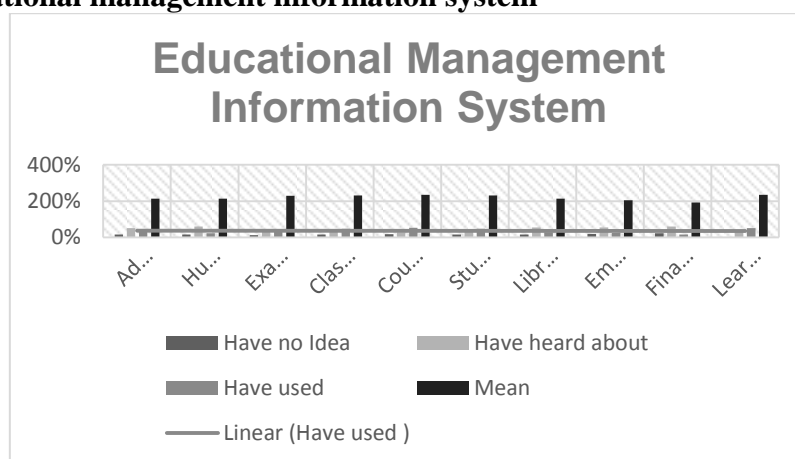
Data analysis

About the educational management information system

- Majority of the respondents were aware about the admission management information system have heard about 51%, have used 32%, have no idea 17% and the mean was 2.14.
- Majority of the respondents were aware about the educational management information system have heard about 60%, have used 24%, have no idea 16%, and the mean was 2.13.
- Majority of the respondents were aware about the educational management information system have heard about 43.42%, have used 43.42%, have no idea 13.14%, and the mean was 2.30.
- Majority of the respondents were aware about the classroom management information system have used 47.49%, have heard about 36.41%, have no idea 16.18%, and the mean was 2.31.
- Majority of the respondents were aware about the course management information system have used 53.48%, have heard about 28.48%, have no idea 18%, and the mean was 2.35.

- Majority of the respondents were aware about the student management information system have used 48.25%, have heard about 36.04%, have no idea 15.69%, and the mean was 2.32.
- Majority of the respondents were aware about the library management information system have heard about 54.33%, have used 29.47%, have no idea 16.18%, and the mean was 2.13.
- Majority of the respondents were aware about the employee management information system have heard about 54.33%, have used 25.43%, have no idea 20.23%, and the mean was 2.05.
- Majority of the respondents were aware about the financial management information system have heard about 60%, have no idea 23.39%, have used 17%, and the mean was 1.93.
- Majority of the respondents were aware about the learning management system have used 50.87%, have heard about 34%, have no idea 15.20%, and the mean was 2.35.

Findings of the study

The study found that a majority of the respondents were aware of various management information systems. Specifically, 51% had heard of the admission management information system, with 32% having used it and 17% having no idea about it, resulting in a mean score of 2.14. For the educational management information system, 60% had heard of it, 24% had used it, and 16% had no idea, with a mean score of 2.13. The library management information system was known to 54.33%, used by 29.47%, with 16.18% having no idea, and a mean of 2.13. The employee management information system had 54.33% awareness, 25.43% usage, 20.23% had no idea, with a mean of 2.05. The financial management information system was known to 60%, used by 17%, with 23.39% having no idea, and a mean of 1.93. The classroom management information system had been used by 47.49%, heard of by 36.41%, with 16.18% having no idea, and a mean of 2.31. The course management information system was used by 53.48%, known by 28.48%, with 18% having no idea, and a mean of 2.35. The student management information system had 48.25% usage, 36.04% awareness, 15.69% having no idea, and a mean of 2.32. Lastly, the learning management system was used by 50.87%, heard of by 34%, with 15.20% having no idea, and a mean of 2.35.

Conclusion of the study

The study concluded that there is significant awareness about various management information systems among respondents in HEC-recognized universities in Pakistan. While the majority of respondents were familiar with systems such as admission, educational, and library management information systems, the actual usage rates varied. The highest awareness was observed for educational management information systems and financial management information systems, although the latter had the lowest usage rate. Systems like classroom and course management information systems had relatively higher usage rates, indicating their importance and integration into the academic environment. Despite this, a notable percentage of respondents still had no idea about certain systems, suggesting a need for better dissemination of information and training. Overall, the study highlights the necessity for enhanced implementation and awareness campaigns to ensure these systems are effectively utilized to improve educational management and administration in Pakistan.

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