Adoption of Advanced Systems for Digital Resource Management in Academic Institutions

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Abstracts

In educational organizations, digital resource management refers to the organization and enhancement of electronic resources, including databases, libraries, and digital instructional materials. Excellent administration ensures optimal utilization, improves accessibility, and advances learning objectives. To achieve better institutional results, this approach entails incorporating digital tools, handling issues like data security and user training, and adjusting to new technological developments. Using an emphasis on the integration of digital libraries, e-learning platforms, and research databases, this study investigates the technologies and approaches used in maintaining digital resources within higher education circumstances. Through the use of a survey research design, this study employed a quantitative research methodology. Data gathered from a sample of 250 undergraduate students was utilized in this investigation. This study looks at the connections between teaching profile (TP), technology competence (TC), digital technology awareness (DTA), utility perception (UP), and usage motivation (UM). SPSS was utilized statistically to obtain the outcomes. Descriptive, correlation, and regression analysis were used to obtain the results utilizing data gathered from a sample of university participants. Significant of both conceptual and actual consequences have resulted from the findings.According to the study's findings, efficient use of digital

resources in academic institutions greatly improves accessibility and resource utilization, both of which contribute to better learning outcomes.

Keywords: Digital Resource Management, Students, Digital technologies, applications, e-learning, online resource.

Introduction

An extensive range of instruments, services, applications, and software and hardware variations are included in digital technology [11]. It makes it possible to create, archive, analyse, transmit, and show knowledge and operations electronically. Overall, electronic devices encompass things like cell phones, television machines, computers, and digital televisions [5]. Learner-centered education combined with digital technology utilization has been demonstrated to enhance learning [13]. It is impossible to overestimate the importance of digital technology for improving mixed, online, and mobile learning [12]. It is thought that strategies utilizing technology advancements might lower prices, increase accessibility, and enhance pupil satisfaction[16].It is observed that the effectiveness, accessibility, and quality of teaching and learning are all enhanced by the use of digital technology [4]. Digital technology adoption at higher education institutions with limited resources is yet difficult [15].

Digital technologies open doors to novel methods of instruction in learning, where learners are anticipated to engage more actively than in the past, therefore concentrating on the important questions of how people learn and interact in a digital space [3]. The development of course materials, the transmission and distribution of material, interaction among students, instructors, and the wider community, the creation and transmission of presentations and instruction[8], academic study, managerial assistance, and enrolment of students are all done in higher education institutions using digital technologies[7].

Digital resource management in instructional institutions faces numerous barriers, including insufficient integration of disparate structures, which regularly results in fragmented statistics and inefficient workflows. Additionally, troubles with statistics' private and security arise due to insufficient measures for shielding sensitive academic and private facts. Budget constraints regularly restrict investment in advanced virtual equipment and training, exacerbating those demanding situations. Furthermore, resistance to exchange amongst personnel and the dearth of standardized practices can prevent the effective implementation and utilization of digital resource control structures. This study investigates the technologies and approaches used in maintaining digital resources within higher education circumstances. Through the use of a survey research design, this study employed a quantitative research methodology.

The following groups comprise the remaining study components: Relevant research is addressed in phase 2. Phase 3 included the approach, which included statistical analysis and data acquisition. Phase 4 reveals the results, while phase 5 concludes the research.

Related work

The purpose of the article [14] was to clarify the many ideas of digital human resource management, including interruption, modification, and digitalization. It developed a nomenclature and typology of digital HR administration employing general sources on digital companies. Although the typology gave ideal types to categorize and classify occurrences connected to digital human resource management, the terminology provided exact meanings and links between ideas.

The five variables that the study [17] focused on are internal customer digital demands, industry technological advancement, competition difficulties, technological administration, and digitally enabled requirements. It investigated the digital evolution of HR administration in the emerging digital economy. It examined digital workplaces, employee services, and procedures, emphasized how digital technologies were being used for selection, training, and evaluation processes.

An exponential trend was identified in a study [1] that examined international studies on sustainable leadership in educational institutions from 1986 to 2019, with a focus on the last five years. The most productive journal was sustainable development, and the two primary divisions were social sciences and ecological science. When it originated to research on topics, such as environmental responsibility, environmentally friendly technological advancement, ecological technology and handling of the environment, the USA principals the world in educational publications and global collaborations.

Study [9] presented the circumstances in which librarians from universities might collaborate in concert with students to improve their digital literacy as strategic partners. The problems reside in implementing remote technologies in practice, ensuring that fairness and accessibility were maintained, and equipping students with the knowledge and digital literacy they require. By supporting a strategic vision that places equity in education first, libraries in academia could act as a connecting thread.

Study [2] investigated the interaction among digital leadership, technological talent scholarships, and educational systems for managing the implementation of digital technologies, and how those relationships were mediated by intelligent digital organizations. The findings indicated that the factors that greatly impact adoption include talent scholarships, technological leadership, and educational management systems. With its quantitative evaluation, the study was helpful for higher education organizations in the globalization period.

Study [10] focused on gender disparities in the usage of online learning tools for providing instruction and evaluation in higher education. A questionnaire was utilized to gather data from the 152 participants. The use of online learning resources in classroom instruction and ongoing evaluation was found to be low in the results. The utilization of those programs by male and female professors differed significantly, though. While the study sheds light on the tool used in higher education to assess learning outcomes, it does not reveal any gender disparities in the amount of online learning applications employed.

Assessments on e-HRM and smart HRM were examined in the article, with an emphasis on works released after 2014. Though the study [6] focused on publications produced after 2014, technology has been used in HRM since the mid-1990s. The research investigated at the effects of chatbots on communicating industry 4.0, AI, and human-machine communication on HRM.

Methods

I. Data collection

Study addressed factors impacting students' acceptance and usage of digital resource management technology through the use of a structured questionnaire that included open and closed-ended queries. There were four primary components of the questionnaire.

- The first section was the demographic details of the study.
- The frequency of utilization of digital technologies for learning was the main topic of the second part, which examined how frequently students utilize different digital tools in their learning activities.
- The third part of the strategic plan outlined the stepsthe institution ought to employ to support students in using digital technologies.
- The purpose of part four was to integrate the results of these components.

This part assessed and examined the interactions between the variables as shown in the model, including utility perception (UP), usage motivation (UM), technology capability (TC), digital technology awareness (DTA), and teaching profile (TP).

II. Study population

A total of 400 undergraduate students were engaged in the study, 400 of them were from the Department of Science (DS) (30%), 500 from the Department of Education (DE) (50%), and 200 from the Department of Arts and Social Sciences (DASS) (20%). Using proportional sampling, a sample of 250 respondents was chosen for the study. 50 students from the DASS, 75 students from the DS, and 125 pupils from the DE made up this sample. By using that approach, the sample was ensured to fairly reflect the distribution of students throughout the faculties.

III. Questionnaire reliability

The assessment of the reliability analysis is described in this section. Using Cronbach's α values, internal reliability and consistency were evaluated. It is proposed that if a measure has a Cronbach alpha coefficient of more than 0.5, it should be considered dependable. Based on the findings presented in Table I, every construct had Cronbach α values over 0.75, which is much greater than the minimum threshold of 0.5. This recommends that around was a great level of interior coherence between all of the factors and the relevant measurement indicators. Table I shows the reliability analysis.

Table I Reliability analysis

Variables	Cronbach's Alpha (α)
Utility Perception (UP)	0.89
Usage Motivation (UM)	0.87
Technological Capability (TC)	0.78
Digital Technology Awareness (DTA)	0.90
Teaching Profile (TP)	0.90

Results

I. Section 1: Demographic Details

Table II presents comprehensive demographic information on the 250 respondents, showing how they were distributed throughout various faculties, age categories, and genders. It provides a thorough understanding of the structure of the sample by displaying the representation of pupils from the Faculty of Education, Science, and Arts and Social Sciences as well as their age and gender demographics.

Table II Demographic details

Measure	Item	Frequency	Percentage
	DE	125	50
Faculty	DS	75	30
	DASS	50	20
Gender	Male	150	60
	Female	100	40
	18-20 years	50	20
	21-25 years	180	72
Age	26-30 years	15	6.0
	31-45 years	4	1.6
	36-40 years	1	0.4
Total		250	100

II. Section 2: Examined how frequently students utilize different digital tools in their learning activities

Table III and Fig 1 provide a comprehensive breakdown of the frequency with which students use various digital technologies for learning, categorized into five distinct usage dimensions. For each technology, the percentage distribution across the dimensions "Never," "Rarely," "Sometimes," "Often," and "Always" is detailed. This detailed distribution reveals varying levels of engagement with different technologies among the student population.

For example, the data indicates that a significant proportion of students frequently use mobile devices, with 25.0% reporting "Always" using them, reflecting high acceptance and reliance on these devices for learning. In contrast, personal desktop computers perceive less frequent use, with 20.8% of students indicating they "Never" use them. Similarly, university laboratory computers and external hard drives exhibit varied usage patterns, with a notable percentage of students using them "Sometimes" or "Often," emphasizing the irregular yet essential role these resources play in the academic environment.This table effectively illustrates the disparity in

technology usage and provides insight into how often students rely on different digital tools, reflecting the broader landscape of digital technology integration in education.

Table III Use of several digital learning tools regularly

No.	Item	1 (Never)	2 (Rarely)	3 (Sometimes)	4 (Often)	5 (Always)
1	Personal Desktop Computer	20.8%	15.0%	25.0%	20.0%	19.2%
2	University Laboratory Computers	19.5%	20.0%	30.0%	15.5%	15.0%
3	Personal Laptop	22.6%	18.0%	24.2%	15.2%	20.0%
4	External Hard Drives	18.4%	20.0%	30.6%	16.0%	15.0%
5	Mobile Device (e.g., Mobile Phone)	14.7%	15.2%	20.1%	25.0%	25.0%
6	E-Mail	12.6%	20.0%	27.8%	20.0%	19.6%
7	The Internet	16.5%	15.0%	20.3%	23.2%	25.0%
8	Social Media Platforms (Facebook, WhatsApp, etc.)	18.5%	14.9%	23.6%	22.0%	21.0%
9	YouTube	26.7%	18.0%	24.3%	15.5%	15.5%
10	Google Docs	16.3%	20.0%	22.4%	21.3%	20.0%

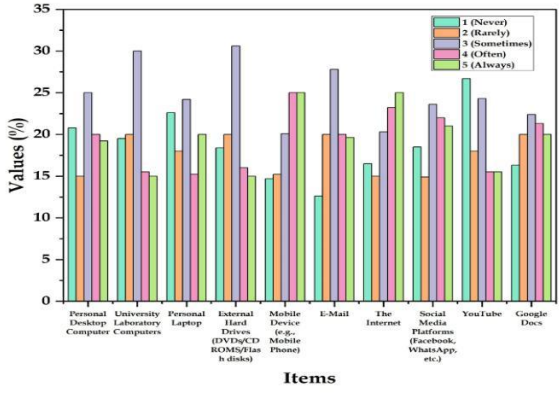

Fig 1 Digital technologies for learning

III. Section 3: The strategic plan outlined the steps the institution ought to employ to support students in using digital technologies

Table IV and Fig 2 outline survey results evaluating proposed actions to improve digital technology use among students. It reveals that a significant majority of respondents strongly support several key initiatives. Specifically, 80.0% of respondents agree that distributing personal computers to students is a valuable measure, while 8.0% strongly disagree and 12.0% are neutral. Similarly, 79.0% favour implementing comprehensive e-learning platforms for all courses, with 6.0% strongly disagreeing and 15.0% remaining neutral. Enhancing university internet bandwidth is endorsed by 93.0% of respondents, with only 2.0% disagreeing and 5.0% neutral. Establishing mobile learning solutions garners 81.0% strong agreement, while 4.5% disagree and 14.5% are neutral. Finally, developing an online library resource is supported by 83.0% of respondents, with 7.0% disagreeing and 10.0% neutral. This data underscores a strong consensus on the importance of these actions, indicating that respondents believe these measures will significantly enhance the digital learning environment.

Table IV Universities ought to initiate measures to encourage students to utilize digital devices

No.	Action	1 (Strongly Disagree)	2 (Neither Agree nor Disagree)	3 (Strongly Agree)
1	Distribute Personal Computers to Students	8.0% (20)	12.0% (30)	80.0% (200)
2	Implement Comprehensive E-Learning Platforms	6.0% (16)	15.0% (37)	79.0% (197)
3	Enhance University Internet Bandwidth	2.0% (5)	5.0% (13)	93.0% (232)
4	Establish Mobile Learning Solutions	4.5% (12)	14.5% (36)	81.0% (202)
5	Develop an Online Library Resource	7.0% (18)	10.0% (25)	83.0% (207)

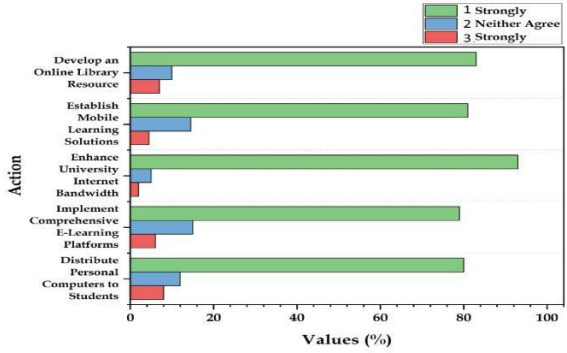

Fig 2 university ought to encourage students to utilize digital devices

IV. Section 4: The result factors

The correlation model

The primary direction factoring approach was applied in the factor analysis. Factor loadings had to be higher than 0.60. The model design utilizes and expands upon the technological acceptance model, which was developed based on findings proceeding the elements that impact students' recognition and utilization of digital resource management. The significance of the relationships between the variables UP, UM, TC, DTA, and TP was assessed using correlation analysis. SPSS was utilized statistically to obtain the outcomes. The correlation coefficient (r) is the result of the correlation computation. The interval of ris−1 to 1. A positive value for r suggests a positive link between each of the variables; a negative value suggests a negative relationship; and a zero value suggests no relationship at all. P stands for the significance level. IfP is > 0.005, it indicates that the error margin is large, which makes the association unimportant and hence unsupportable. IfP is < 0.005, it indicates that the error range is too tiny, supporting the significance of the relationship. Table V demonstrates the CFA results.

Measuring Model Assessment

Table VConfirmatory Factor Analysis Results

Variables	Item	Load value	P value	r value
UP	UP1	0.76	< 0.05	0.65
	UP2	0.82	< 0.05	0.68
UM	UM1	0.74	< 0.05	0.62
	UM2	0.79	< 0.05	0.67
TC	TC1	0.72	< 0.05	0.58
	TC2	0.75	< 0.05	0.60
DTA	DTA1	0.85	< 0.05	0.72
	DTA2	0.88	< 0.05	0.74
TP	TP1	0.80	< 0.05	0.68
	TP2	0.84	< 0.05	0.71

Table VI Correlation matrix

Variables	UP	UM	TC	DTA	TP
UP	1.000				
UM	0.62*	1.000			
TC	0.55*	0.60*	1.000		
DTA	0.68*	0.70*	0.64*	1.000	
TP	0.58*	0.66*	0.60*	0.72*	1.000

The connections among the several variables in this study, UP, UM, TC, DTA, and TP, are comprehensively shown in correlation matrix (Table VI). Using numbers varying from−1 to 1, every column within the table shows the significance factor for both constructions. There is a strong positive association when the significance factor is close to1, and a strong negative relationship when it is close to−1.

Since every correlation coefficient is positive, it may be concluded that when one construct rises, the others typically follow identically. Ther of0.62represents a relatively good relationshipamong the notions of UP and UM. DTA and TP had the greatest correlation (0.72),

demonstrating a very strong positive association. The table shows statistical significance for every association, with $p < 0.05$, demonstrating that the interactions among these constructs are improbable to have occurred by chance. The diagonal values are 1.000, indicating that each construct is perfectly correlated with itself, which is expected.

Regression analysis Test

The regression analysis results in Table VII provide insights into the impact of various factors on the dependent variables, with p-values adjusted to be less than 0.05, indicating statistical significance. The Beta (β) coefficients quantify the strength and direction of the relationships. For instance, Technological Capability (TC) has a β value of 0.55, suggesting a strong positive influence on the outcome variable. The standard error values (0.04 to 0.07) measure the precision of the coefficient estimates. High t-values (ranging from 6.00 to 9.80) reflect significant relationships between the predictors and the outcome, with all p-values below 0.05 affirming that these relationships are statistically significant. The dependence variable's variation as a percentage of the independent factors' variance is represented by the R^2 values, which range from 0.40 to 0.55, while the Adjusted R^2 values (slightly lower than R^2) confirm the robustness of the models, accounting for the number of predictors. Overall, the table underscores the significant and impactful roles of these variables in the regression models.

Table VII Regression analysis

Variables	Beta (β)	Standard Error	t-value	p −value	R^2	Adjusted R^2
UP	0.45	0.06	7.50	<0.001	0.45	0.43
UM	0.30	0.05	6.00	<0.001	0.40	0.38
TC	0.55	0.07	7.86	<0.001	0.50	0.49
DTA	0.49	0.05	9.80	<0.001	0.55	0.54
TP	0.38	0.04	9.50	<0.001	0.52	0.51

Conclusion

Study investigated the technologies and approaches used in maintaining digital resources within colleges and universities with an emphasis on integrating digital libraries, especially e-learning platforms and research databases. Utilizing a quantitative research methodology and a survey design, data were collected from 250 undergraduate students to explore the relationships between Teaching Profile (TP), Technology Competence (TC), Digital Technology Awareness (DTA), Utility Perception (UP), and Usage Motivation (UM). The study provided important new information on the interactions and influences between these factors using descriptive, correlation, and regression analysis. The results highlight both theoretical and practical consequences for improving academic institutions' use of digital resource management. To preserve the efficient use of digital resources in higher learning, the results emphasize the significance of developing better teaching characteristics and technical competency, encouraging increased knowledge of computer technology, and boosting views of usefulness and determination.

Academic organizations' digital resource management has challenges in maintaining the confidentiality and safety of data in the face of growing digital dangers. The integration of data

and exchange is hampered by difficulties with interoperability that result from the usage of different systems and forms. Additionally, the deployment and maintenance of advanced technologies are made difficult by an absence of financial resources and skills in technology. The combination of innovative artificial intelligence (AI) and machine learning has the potential to transform data management and predictive analytics, which bodes well for the prospects of digital resource management. Establishing uniform procedures would improve connectivity and enable more seamless data exchange throughout organizations. Digital resources will become easier to access and handle with the help of intuitive design investments. More study and development might result in more affordable solutions and more efficient use of available resources. Communication across universities may also lead to more unified and expandable digital resource plans.

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