



Role of Digital Literacy Regarding the Problems and Prospects of Office Computerization in Higher Educational Context

¹Mukramin Khan

¹Department of Public Administration, Gomal University, Dera Ismail Khan, KP, Pakistan.

ABSTRACT

Article History:

Received: Dec 21, 2024
Revised: Feb 12, 2025
Accepted: March 19, 2025
Available Online: March 30, 2025

Keywords: Digital
Literacy, Problems,
Prospects & Higher
Educational
Institutions.

Funding:

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

In the contemporary era, rapid technological changes led organizations towards a revolution in information and communication technologies (ICTs). As compared to other organizations, the role of digital literacies in higher education is indispensable that poses new opportunities and challenges at all levels in institutions. Digital literacy concerning teaching and non-teaching workforces becomes a prominent tool in updating their knowledge and skills that enable them to use office computerization efficiently and effectively. This study is an effort to examine the digital literacy about its problems and prospects by collecting the data from the administrative workforces in higher education contexts that were analyzed by using different statistical tools. The results offer significant statistical insights about existence of relationships among digital literacy about the prospects and problems. Thus, this study provides some recommendations along with future directions to the institutional management and upcoming research fellows to explore same phenomena from other dimensions and contexts to get desired outcomes.

© 2022 The Authors, Published by CISSMP. This is an Open Access article under the Creative Common Attribution Non-Commercial 4.0

Corresponding Author's Email: mukramin.irfan@gmail.com

DOI: <https://doi.org/10.61503/ciissmp.v4i1.329>

Citation: Khan, M. (2025). Role of Digital Literacy Regarding the Problems and Prospects of Office Computerization in Higher Educational Context. *Contemporary Issues in Social Sciences and Management Practices*, 4(1), 299-318.

1.0 Introduction

The application of digital technologies has been considered a shift in global development in the current age of globalization (Appio, Frattini, Petruzzelli & Neirotti, 2021). This shift requires higher learning institutions to adopt innovative technologies to survive in a competitive situation (Cope & Kalantzis, 2000). Digital literacy is the claim of the computer-based tools and techniques to meet with the demands of information and communication at the individual and organizational levels (Yoram & Alkalai, 2004). These tools, related to computer-based knowledge about hardware, software, office automation, networking tools, and techniques which are considered as the vital gears in producing valued information for decision making (Aviram & Alkalai, 2006). Digital literacy is the science that examines behavior and belongings as it is a binding-force which oversee the means of flowing information for prime availability and usability (Lankshear & Knobel, 2008). Digital literacy is concerned with collection, organization, retrieval, storage, classification, distribution, and use of information for decision making.

The demand for computer-literacy curtails from the manner through which ICTs are dominating diverse characteristics in modern working environment (Fieldhouse & Nicholas, 2010). A different group of individuals (teachers, employees & students) have different ideas about the application of digital-literacy since several digital literacy models have been offered by researchers in diverse contexts (Osakwe & Lawra, 2012). However, their usage and intensity remain the same as digital-literacy skills are measured as a vital tool for effective and well-organized learning in an emergent digital environment (Martin & Rader, 2013). For this drive, different individuals use diverse tools and techniques to exploit digital literacy at workplaces to get desired outcomes (Barr, Harrison & Conery, 2015; Fernández, Gómez, Binjaku & Meçe, 2023). Computerization is a dire need in a viable environment as the use of computers at workplaces not only helps the individuals to effectively manage the official record but also helps them to manage their certified activities promptly and to succeed in the organizational deeds more professionally.

The applicability, accessibility, and promoting digital literacy is a dire need of the higher education institutions as it is considered a vital tool for development (Christine, Julia & Colin, 2016). It provides new prospects to stakeholders in arranging assigned tasks systemically thus producing more accurate outcomes at the workplace (Hobbs & Martens, 2017). Digital literacy has both problems and prospects and becomes the responsibility of institutional management to organize the whole phenomenon by adjusting new technologies in viable situations (Nancy, David, Jimmy, Wong, 2018). Different applications help teachers, students and administrative workforces to manage their daily tasks over the proper manner to produce optimistic results (McGuinness & Fulton, 2019). Conversely, digital literacy brings along problems like inadequate formal systems, scarce skills, lack of strategic environment, lack of accessibility, and motivation (Frolova, Rogach & Ryabova, 2020). Digital literacy has prospects like promoting digital cultures, creativity, and collaboration over applicability of digital culture.

1.1 Research Hypotheses

H₁: Digital literacy is negatively ‘associated’ with the problems of computerization

efforts in any organization including public sector higher education institutions (Correlation).

H₂: Digital literacy is positively 'associated' with the prospects of the computerization in higher education institutions of developing countries like (Correlation).

H₃: Digital literacy increases the Problems of computerization at the institutional level. (Negative prediction) (Regression).

H₄: Digital literacy increases the Prospects of computerization in higher institutions. (Positive prediction) (Regression).

2.0 Literature Review

Information and communication technologies are widely used as the strategic tools for survival and the ultimate development of any organization including higher education institutions. Without the application of modern technologies, the survival of institutions becomes questionable and the development of institutions might be at stake (Yoram & Alkalai, 2004). The literature reveals that the enlargement of the institutions is mainly dependent upon the applicability of modern tools and techniques as these technologies are not static however they are dynamic (Fieldhouse & Nicholas, 2010). In this regard, digital literacy, on the part of the administrative employees is vital in chasing the long-term objectives of the institutions (Osakwe & Lawra, 2012). The computer literacies and digital literacies are the vital features of digital technologies that required additional skills on part of different stakeholders associated with the credibility of institutions in the contemporary era of globalization where the technological changes became the need of modern time (Bukar & Shehu, 2014).

The contemporary technologies are positively correlated with the performance management of institutions, since, the new technologies make substantial changes in office workplaces by updating office technologies that improve performance and it can only be possible when office is equipped with required and relevant technologies (Mashau & Andrisha, 2016). Along with the applications of digital literacies, the ultimate collaboration and cooperation among different stakeholders is the phenomenon of greater standing for management of the concerned institution (Banny, Churchill & Thomas, 2017). In this regard, the application of various technologies (computer literacy & digital literacy) is basic requirements for the adaptability of digital technologies in each context including higher education (McGuinness & Fulton, 2019). Consequently, the main challenge is to adopt emergent technologies for the utmost benefits of institutions and by the way, the application of advanced technologies in its true spirit is a dire need of the institutions in a contemporary environment.

2.1 Digital Literacy

Due to recent technological development, the adaptability of the digital literacy becomes vital for the organizations to survive in the competitive environment since, the basic computer literacy is greatly emphasized in the institutional requirements (Alkalai & Eshet, 2004). Digital literacy is a combination of socio-emotional skills, cognitive abilities, and technical tendencies (Lankshear & Knobel, 2008). Consequently, with the growing popularity of the learning environments and digital openness, digital literacy is seeming as survival ability for institutions. As technology changes, different features of digital literacy are susceptible to change persistently,

and thus it is imperative for workforces to constantly update their skills about advanced technologies (Goulao & Fombona, 2012). The main role is required from students, teachers, and administrative workforces in context of higher education along with the required expertise, knowledge, and skills necessary for the applicability of digital literacies about office computerization at workplaces (Alkalai & Hamburger, 2014).

Consequently, it is vital for management while applying advanced technologies that excessive care should be taken about the changing nature of different technologies. Thus, the use of up-to-date office technologies can lead to improved performance but there are certain problems and prospects associated with the applicability of digital literacy (Mashau & Andrishu, 2016). For this purpose, different online and offline applications are available to facilitate students and teachers to obtain desired information about their core curriculum and courses to update their knowledge and skills accordingly (Hobbs & Martens, 2017). For administrative workforces, different online tutorials are also available to facilitate workforces in the application of different tools which in turn help them in office computerization (Banny, Churchill & Thomas, 2017). So, different studies are available on digital literacies which help in understanding the phenomenon carefully in any context including higher institutions about literacies in office computerization (McGuinness & Fulton, 2019).

2.2 Problems of Digital Literacy

In existing research studies, different researchers have identified problems regarding digital literacy which are mainly concerned with adaptability, usage, and development (Buckingham & David, 2007). Similarly, other problems related to digital literacy comprise individuals' behaviors towards resistance to change, the caustic attitude towards the ICTs, lack of systematic approach and lack of awareness and training, lack of support from the technical and administrative workforce (Phuapan & Kaplan, 2010). Similarly, lack of proper management and maintenance and mismatch between the contextual background, required technologies, work practices, and culture. At the broader level, there exist the usage and development problems that need to be understood and manage at time of emergence (Osakwe & Lawra, 2012). In this regard, both usage and development problems are the hidden constraints and interdependent in similar or the diverse contexts with diverse digital platforms to develop the skill exchanges (Clark, Couldry, MacDonald & Stephansen, 2014).

Likewise, the most prominent problems regarding digital literacy are the availability of required skills, competencies, and attitudes which can only be obtained over digital learning by offering the required assistance to users/workforces (Christine, Julia & Colin, 2016). For this drive, different problems are at the surface which required special attention on the part of experts to bring the situation at par to the desired standards (Care, Griffin, Scoular, Awwal & Zoanetti, 2017). The students, teachers, and the administrative workforces are facing different problems at workplaces while the applicability of digital technologies (Maria, Hashemi, Lundin & Anne, 2018). The main problems are concerned with accessibility and the usages/ utilization of digital technologies due to the non-availability of sufficient skills and appropriate knowledge being imparted to them. Consequently, to cater to the situation, desired training is the best solution which must be imparted

to stakeholder at different levels about digital technologies applications (McGuinness & Fulton, 2019).

2.3 Prospects of Digital Literacy

Digital literacy determines the prospects for human competitiveness and development which further offers certain extraordinary predictions in different contexts including the education sector (Alkalai & Amichai, 2004). However, the educational institutions are sometimes not capable to afford the sophisticated digital technologies due to accessibility and availability of certain required skills and resources (Margaryan & Littlejohn, 2008). In this regard, the digital literacy has provided certain wide-ranging opportunities to both the developing and the developed countries, however, the role of digital literacy about developing countries is more prominent (Fieldhouse & Nicholas, 2010). For this purpose, the introduction of digital libraries is a milestone towards the development of digital mastery in the education sector as it provides sufficient support and materials to users (readers and learners) about the issues related to digital technologies about its adaptation in almost all the contexts including higher educational institutions at wider scale (Jeffrey, Bronwyn & Oriel, 2014).

The literature reveals that digital literacy is modern culture is active in almost all higher educational institutions since through digital technologies, institutions can manage institutional activities for the time, cost, and work in the institutions (Wilson & Scalise, 2015). The institutions are required to promote the culture of digital technologies in higher educational institutions which may help them in achieving the desired status in the contemporary competitive environment (Khalid & Pederson, 2016). For this purpose, the application of digital technologies becomes the dire need for almost all academic institutions wherein the main focus is always given to provide sufficient knowledge to upcoming prosperities over HEIs as highest seats of teaching and learning (Santos & Sandro, 2017). Thus, different resources, on the part of institutions, are required to apply the digital technologies and to maintain the long-lasting image of the concerned institutions in the age of globalization to maintain the status quo of concerned institutions (Banny, Churchill & Thomas, 2017).

2.4 Digital Literacy, Problems and Prospects

There are certain problems and prospects associated with the application of digital literacy. As, digital literacy played a significant role in streamlining official records over office computerization (Wilson, Hardman, Thornam & Dunlap, 2004). On one side, digital literacy provides developing opportunities through systematically maintaining the institutional endeavors but on the other hand, it can also create certain problems for the management when it is not implemented in its true spirit (Milbrath & Kinzie, 2006). Literature reveals that in circumstantial emergence of digital literacy, the users are fronting various external and internal challenges for the use and development of digital literacy (Deursen & Van, 2010). Consequently, the application of digital literacy in higher education institutions is not a trivial practice rather it postures various problems and challenges to university management which needs certain cultured transformations (Meyers, Erickson & Small, 2013).

By assuming perceptual differences, users behave differently while using digital literacy

tools and techniques for learning and teaching drives in higher education (Nataraj & Sam, 2015). Also, innovative technologies offer access to resource persons like experts, teachers, researchers, and managerial employees across the institutions (Yuksel, Robin & McNeil, 2016). The institutional management required well-defined measures in the adaptation of digital technologies to cater to problems associated with adaptation and take certain measures for further expansions in utilizing digital technologies (Banny, Churchill & Thomas, 2017). Thus, the implications of digital literacies in higher education need further investigations and evidence by exploring the environment for the further utilization of digital learning opportunities in an educational context (Nancy, David, Jimmy, Wong, 2018). Therefore, the institutions are required to be focused on applications of digital technologies consistently to achieve the required values and desired status (McGuinness & Fulton, 2019).

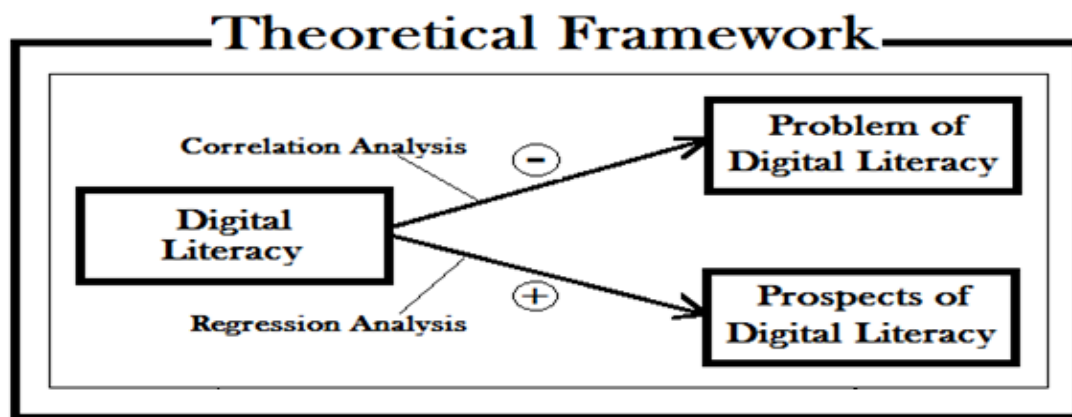


Figure 1 Theoretical Framework

3.0 Methodology

3.1 Research Design

In social research, the research strategy/design is usually the procedures and methods which are used to measures (research variables, data collection, and data analysis) as identified in the problem statement of the research study. So, the research design/strategy is the basis which is produced to find the responses/reaction towards the research questions (Saunders, Lewis & Thornhill, 2012). Thus, research design developed for a current research study is exploratory where both descriptive, as well as inferential parameters, are used to examine the data and relationships among variables. Also, a survey has been used in this study because when the population is big and it is not needed to contact every element of the population then the survey is the best approach (Sekaran & Bougie, 2013).

3.2 Research Philosophy

Positivism is research philosophy as adopted in this research as positivism suggests that knowledge is what can be verified objectively over observations (what is knowledge) (Cooper & Schindler, 2008). Likewise, positivist approach recommends collection and recording (how to communicate Knowledge) (Nicholas & James, 2008). These beliefs automatically propose research methodology (how to acquire knowledge) which is based on all tools of observations for

conducting research (Saunders, Lewis & Thornhill, 2012). As, quantitative and qualitative data collection, analysis, and presentation are the main prerequisite of positivism, thus, philosophy positivism is used in present research.

3.3 Population and Sample

In social research, population and sample are basic components wherein population represents the entire group in which the researcher is interested while a sample is used for data collection since the whole population is sometimes not required or needed and further which is more time and cost consuming (Hartl & Daniel, 2007). The population of interest in this study comprises non-teaching workforces who are working in Gomal University, Dera Ismail Khan, and Pakistan. Both the administrative workforces from the administration as well as from teaching departments (1500) were the total population of the study. For sample-size determination, statistical formula was used (Black & Champion, 1976) which offered the sample-size of total 130 respondents for the current study to whom the questionnaires were distributed wherein 123 were recollected at 95% response rate.

3.4 Data Collection Methods

The data collection is the imperative measure of social research procedure by determining the data sources through which the data has been collected like the secondary sources and primary sources. Thus, by knowing data sources, data collection would be in an appropriate quantity and quality to execute analysis of collected data (Goode & Hatt, 1952). When the researcher fails to muster the suitable data, then they will be unable to achieve research objectives and aims suitably by producing systematic and reliable conclusions (Sekaran, 1999). The researcher mustered both secondary and primary data by further questioning the data to meet “requirements of research” and to reach the conclusion.

3.5 Questionnaire Design

A questionnaire was designed to collect primary data from respondents about their characteristics and the research variables. The questionnaire was adapted from the previous research studies (Eshet & Alkalai, 2004; Becker & Zentner, 2017) that were previously used by various researchers for their research studies. For the present study, the researcher used the same questionnaire for the primary data collection by collecting the views/opinions of respondents about the variables by applying certain changes (modifications) as per requirements and context of the present research study.

3.6 Validity and Reliability

Through questionnaires, data were collected from respondents and was examined to conclude that whether the collected data facilitated the scholar in meeting the main objectives of research study along with challenging the questionnaire validity and reliability. The validity was determined over the pilot study by examining construct and content validity while the reliability of the questionnaire was judged through Cronbach’s coefficient alpha to investigate internal consistency among the research variables. The table below provided Cronbach’s coefficient details against different variables.

Table 1 Reliability Statistics

SN	Measure	Number of Items	Cronbach's Alpha
1	Digital Literacy	08	.922
2	Prospects of Digital Literacy	09	.858
3	Problems of Digital Literacy	09	.750

Factor analysis was used as a statistical procedure to define the inconsistency among perceived and correlated variables regarding the possibly lower sum of unseen variables which are known as the factors. In exploratory studies, it is vital to recognize hidden variables that might exist in the specific domain. The reliability analysis indorsed that the digital literacy scale is usable in the present study by providing satisfactory results. Thus, as a succeeding step, the factor analysis is used to determine the extent to which the digital literacy scale of usable in the present context. Factor analysis allows the researchers to examine the existence of hidden variables those which are somehow independent on each-other and tries to generate new variables (factors) and coefficient of linear combination is called factor loading.

Table 2 EFA Total variance explained for 09 Items (Digital Literacy)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.766
Bartlett's Test of Sphericity	Approx. Chi-Square	675.091
	df	36
	Sig.	.000

The Kaiser-Meyer-Olken (KMO) and Bartlett's Test of Sphericity (Bartlett's test) are used for sampling adequacy. To assume factorability, Bartlett's Test of Sphericity needs to be significant with a p-value smaller than .50 ($p < .50$) while the Kaiser-Meyer-Olken (KMO) in the above Table KMO value is 0.766 greater than 0.5 and BTS value is 0.000. Factor analysis, lower proportion, more suited will be data. KMO value in between .7 to .8 indicates sampling and in the table above, KMO value .766 indicated that sampling adequacy. Moreover, small values (.000) of significance level indicates that the factor analysis might be useful with the data.

Table 3 EFA Total variance explained for 09 Items (Digital Literacy)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	4.316	47.952	47.952	4.316	47.952	47.952
2	1.769	19.660	67.612			
3	.792	8.803	76.415			

4	.653	7.259	83.674
5	.497	5.524	89.198
6	.381	4.234	93.433
7	.272	3.019	96.451
8	.256	2.844	99.295
9	.063	.705	100.000

Extraction Method: Principal Component Analysis.

Kaiser's method is used to select and hold factors that have eigenvalues greater than 1.0 and considered suitable for further analysis. The table about total variance explained shows how the variance among different components is distributed. For components, common standards that might be convenient is 1, and hence, in the existent situation, it is noted the components have a measure of explained variance (eigenvalues) are greater than 1.0. Thus, total variance explained for components explains that nearly as much variance as explained for 09 items. Similarly, variance % among items "accounted for by each component before and after rotation". Likewise, cumulative percent describes that half of the variance is accounted for by the first 07 components.

Table 4 EFA Component Matrix (Digital Literacy)

Items	Component
Digital Literacy 01	.749
Digital Literacy 02	.451
Digital Literacy 03	.763
Digital Literacy 04	.823
Digital Literacy 05	.648
Digital Literacy 06	.376
Digital Literacy 07	.942
Digital Literacy 08	.452
Digital Literacy 09	.799

Extraction Method: Principal Component Analysis.

The Pattern/component matrix was used to examine the cross-loadings and in the table above, there were no cross-loadings it was recorded that eight features were reserved after rotation. All the items (09), used for digital literacy were used/assumed and out of them (08) items have shown having the values greater than 0.4. Therefore, the factor loadings for digital literacy is enough to meet the criteria principal component analysis.

Table 5 EFA Total variance explained for 09 Items (Prospects)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.702
Bartlett's Test of Sphericity	Approx. Chi-Square	377.790
	df	36
	Sig.	.000

The KMO and Bartlett's Test tests are used to measure the data whether it is suited for factor analysis. These tests measure the sampling adequacy for the model/study. The dimension is

a fraction variance degree between variables together with their components which might have the mutual variance. Therefore, a lesser proportion, more suitable would be data. The KMO value in between .7 to .8 shows sampling adequacy, KMO value, and in the present case is .702 showed that sampling adequacy. Likewise, values (.000) of significance level which are below 0.05 show that the factor analysis is useful for present data/study.

Table 6 EFA Total variance explained for 09 Items (Prospects)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	3.323	36.920	36.920	3.323	36.920	36.920
2	1.703	18.927	55.848			
3	1.105	12.281	68.128			
4	.671	7.452	75.580			
5	.625	6.944	82.523			
6	.612	6.802	89.325			
7	.455	5.051	94.376			
8	.343	3.807	98.183			
9	.164	1.817	100.000			

Extraction Method: Principal Component Analysis.

Again, the Kaiser method was used concerning the components having eigenvalue greater than (1.0) which usually shows the suitability of data for further analysis. Therefore, the table above provides the information concerning prospects of digital literacy along with their Eigenvalues which are greater than 1.0 which further indicated that all the components have been retained with the greater than 1.

Table 7 EFA Component Matrix (Prospects)

Items	Component
Prospects of Digital Literacy 01	.922
Prospects of Digital Literacy 02	.487
Prospects of Digital Literacy 03	.113
Prospects of Digital Literacy 04	.474
Prospects of Digital Literacy 05	.532
Prospects of Digital Literacy 06	.482
Prospects of Digital Literacy 07	.670
Prospects of Digital Literacy 08	.694
Prospects of Digital Literacy 09	.744

Extraction Method: Principal Component Analysis.

Table 8 EFA Total variance explained for 08 Items (Problems)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.885
Bartlett's Test of Sphericity	Approx. Chi-Square	878.027
	df	28
	Sig.	.000

For factor analysis, Bartlett's and Test KMO tests were used again to measure data by examining its suitability which further indicates sampling adequacy for the study. The fraction dimension is the variance degree between variable along with their attributes regarding the components which might have common variance. Thus, a smaller proportion, suitable more would be the data. The KMO values with different fractions indicate the standards of sampling adequacy, Therefore, in the present study, KMO value is .885 which shows the sampling adequacy. Similarly, significance values (.000) show that factor analysis is convenient for the current study.

Table 9 EFA Total variance explained for 08 Items (Problems)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	5.279	65.993	65.993	5.279	65.993	65.993
2	.959	11.994	77.987			
3	.564	7.055	85.041			
4	.409	5.113	90.154			
5	.324	4.046	94.200			
6	.279	3.487	97.687			
7	.146	1.821	99.508			
8	.039	.492	100.000			

Extraction Method: Principal Component Analysis.

Again, concerning problems of digital literacy, Kaiser's method was used to select and retain components having eigenvalues "greater than 1.0" and measured proper for analysis. The table above regarding "total variance explained" shows how variance among diverse components is dispersed. Common standards for components that may be suitable are 1 and thus, in the current case, components have a measure of eigenvalues (explained variance) "are greater than 1.0". So, "total variance explained for components explains" that nearly as variance clarified for 08 items. Also, the variance percentage among diverse items accounts for each component after and before

rotation. “Cumulative percent describes that variance half is accounted” by first 07 components.

Table 10 EFA Component Matrix (Problems)

Items	Component
Problems of Digital Literacy 01	.976
Problems of Digital Literacy 02	.667
Problems of Digital Literacy 03	.788
Problems of Digital Literacy 04	.641
Problems of Digital Literacy 05	.693
Problems of Digital Literacy 06	.892
Problems of Digital Literacy 07	.932
Problems of Digital Literacy 08	.840

Extraction Method: Principal Component Analysis (components extracted).

The Kaiser method was again used regarding components having eigenvalue greater than (1.0) which typically indicates the suitability of data for supplementary analysis. Thus, the above table makes available information concerning the problem of digital literacy along with its Eigenvalues which are greater than 1.0 which indicated further that all the components were retained those who have values greater than 1.

4.0 Findings and Results

After collecting secondary and primary data, the analysis of data is the most important phase in social research by obtaining desired outcomes. The data analysis is the process of answering the research questions (Tabachnick & Fidell, 2007). Therefore, several tools are used to first reduce data into manageable form by answering specific research questions (Adèr & Mellenbergh, 2010). Thus, the argumentation tool was used for qualitative data analysis while statistical procedures were used to test hypotheses and answering research questions as developed from the theoretical framework of the study.

This is the main section wherein results obtained over statistical procedures have been presented and where the research questions (hypotheses) have been answered. The descriptive, as well as the inferential statics, have been used to find the answers to research questions and to reach conclusion systematically.

Table 11 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Digital Literacy	123	2.11	4.44	3.2945	.54914
Prospects	123	2.00	4.00	2.9783	.53224
Problems	123	1.00	4.00	2.7703	.82114
Valid N (List-wise)	123				

- H₁:** Digital literacy is negatively ‘associated’ with problems of computerization effort in any organization including public sector universities.
- H₂:** Digital literacy is positively ‘associated’ with the prospects of computerization in higher institutions.

Table 12 Correlation Analysis

		Digital Literacy	Prospects
Prospects	Pearson Correlation	.770**	1
	Sig. (2-tailed)	.000	
	N	123	123
Problems	Pearson Correlation	-.589**	-.517**
	Sig. (2-tailed)	.000	.000
	N	123	123

**Correlation is significant at the 0.01 level (2-tailed).

The table above provides the information by using the correlation to examine the association among research variables both independent (digital literacy) and dependent variables (prospects and problems). The correlation analysis shows that there is positive and significant association exists between the digital literacy (independent) and prospects of digital literacy (dependent) (p-value = .770 & sig-value = .000). Similarly, correlation analysis further confirmed the negative association between digital literacy and problems and digital literacy. Likewise, the negative correlation is also confirmed between the prospects and problems of digital literacy. Keeping in view the results obtained from correlation, it is concluded that the first and second hypotheses about the correlation are accepted.

The discussion section determines that what was meant to describe and interpret the implication of the research findings by comparing findings of the current study with findings of existing studies. This comparison enables the researchers to make clear the positions of their research studies. As per the hints from the existing research studies findings, the present study was aimed to explore the relationship (association) between digital literacy and problems of digital literacy (hypothesis #1) and to examine association amid digital literacy and prospects of digital literacy (hypothesis # 2). In this regard, the present study examined the negative association between digital literacy and its problems. These results are in line with the previous studies' findings (Cook & Smith, 2004; Dewan & Riggins, 2005; Gillen & Barton, 2009; Howard & Madalyn, 2014; Khalid & Pederson, 2016; Buzzetto, Elobeid & Elobaid, 2017). Similarly, results of the present study showed the positive association between digital literacy and its problems which are in line with findings of previous studies (Marc & Rishma, 2004; Marakas, Johnson & Clay, 2007; Mark & Tina, 2010; Murray & Perez, 2014; Care, Griffin & Zoanetti, 2015; Banny, Churchill & Thomas, 2017).

H₃: Digital literacy increases the Problems of computerization at the institutional level.
(Negative prediction).

Table 13 Model Summary

Model	R	R Square	Adjusted Square	R	Std. Error	F	Sig.
1	.589 ^a	.346	.341		.66663	64.111	.000

a. Predictors: (Constant), Digital Literacy

b. Dependent Variable: Problems

Table 14 Coefficient of Regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.669	.367		15.447	.000
	Digital Literacy	-.880	.110	-.589	-8.007	.000

The third hypothesis was related to a negative prediction of digital literacy towards its problems. In this regard, by applying regression analysis, statistical evidence provides sufficient material about the impact of digital literacy on the problems. The R square, in the summary table, provides the appropriate information about 35% variation in problems due to the applications of digital literacy. Furthermore, the negative signs in (B & t) also support the finding (prediction) about the relationships under considerations. Likewise, the coefficient of regression also provides enough evidence about the impact of digital literacy on problems. Therefore, statistical evidence is supportive of positive prediction concerning digital literacy and prospects. By observing findings from the present study, it is concluded that hypothesis 3 is accepted.

Digital literacies have certain associated problems regarding applications in diverse contexts including higher education. Concerning digital literacies, different existing studies are available and accessible with diverse findings. Likewise, some studies provide the results regarding problems of digital literacies like lack of strategic environment, lack of motivation and accessibility, lacking skills and inadequate foundation of formal systems. The present study also identified the same problems by finding desired relationships/results through statistical shreds of evidence by collecting primary data from the respondents hailing from the higher educational institutions. In this regard, findings of the present study are in line with findings of previous studies by providing sufficient information (Dutton, Gillett, McKnight & Peltu, 2004; Martin & Grudziecki, 2006; Bawden & Haoollow, 2008; Fieldhouse & Nicholas, 2010; Lankshear & Knobel, 2012; Nataraj & Sam, 2015; Andrade & Krishan, 2016).

H₄: The Digital literacy increases the Prospects of computerization in the higher institutions.

(Positive prediction).

Table 15 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error	F	Sig.
1	.770 ^a	.592	.589	.34129	175.709	.000

a. Predictors: (Constant), Digital Literacy

b. Dependent Variable: Prospects

Table 16 Coefficient of Regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.521	.188		2.773	.006
	Digital Literacy	.746	.056	.770	13.256	.000

The fourth hypothesis was about the influence of digital literacy on the prospect associated with the applications of digital literacy (positive prediction). To examine the impact/influence of the independent variable on the dependent variable, the regression procedure was applied. The table above provides sufficient information to decide the said prediction. In summary table, coefficient of determination (R square) shows that there is 59% variation in the prospects of digital literacy (dependent variable) is due to digital literacy (independent variables). While in the coefficient of regression it is evident that applications of digital literacy are a stronger predictor of the prospects of digital literacy (p values = .000). Therefore, statistical evidence confirmed the impact of digital literacy on the prospects through the statistical procedure (regression analysis). Consequently, from the above analysis, it is concluded that hypothesis # 4 about the positive prediction is thus accepted in the present study.

The study was aimed to examine the impact of digital literacy on the prospects associated with the applications of digital literacy. In existing research studies, the literature on same issues provides valuable shreds of evidence about the impact of digital literacies on the prospects allied with the claims of digital literacies. Digital literacies help in promoting digital cultures in institutions by inspiring students and workforces to be creative at institutions. Moreover, it helps institutions in creating collaborations between students, workforces, and institutional management. The present study explores this relationship by applying statistical procedures by providing enough statistical information about the impact of digital literacy on prospects associated with the application of digital literacy. Thus, findings of the present study are in line with findings of previous studies (Martin & Anderson, 2000; Applegate, Austin & Mcfarlan, 2005; Calvani, Cartelli, Fini & Ranieri, 2008; Fraillon, Schulz & Ainley, 2010; Smeda, Dakich & Sharda, 2014; Khalid & Pederson, 2016; Banny, Churchill & Thomas, 2018).

5.0 Discussion and Conclusion

In higher education context, there are different stakeholders engaged in the institutional activities comprising the students, teachers, and administrative workforces. In the present research work, the main emphasis was given to the administrative workforces hailing from different administrative units/sections and the teaching department. The views/opinions of these employees were collected through a structured questionnaire about questions concerning digital literacy and its associated prospects and problems and were analyzed by using different statistical procedures to reach the conclusion more systematically. In this regard, concerning the association between digital literacy and its prospects and problems, correlation tool was used. Results obtained from correlation show that there is a positive correlation between the digital literacy and prospects of digital literacy (Pearson correlation value=.770 while significant value=.000). A negative association was found amid the digital literacy and problems (Pearson correlation=-.589 while significant value=.000).

To examine the impact of digital literacy on problems of digital literacy, regression procedure was run thereby confirming the desired relationship. The regressions analysis shows that there is 59% change/variation in prospects due to digital literacy with (B-value = .746 while significant value = .000). Similarly, in exploring the impact of digital literacy on problems, again regression procedure was run thereby producing 35% variation in problems is due to digital literacy along with values (B-value = -.880 while significant value = .000). Therefore, all hypotheses were tested successfully by producing valuable statistical information regarding the different nature of relationships among the research variables in the context of higher education. In this regard, the present study provides both the qualitative and quantitative pieces of evidence about digital literacy along with its prospects and problems in the context of higher institutions.

Digital literacy regarding office computerization at workplaces is vital for all workforces in institutions like students, teachers, and administrative workforces. However, in the present study, administrative workforces were mainly emphasized due to their critical role in performing diverse administrative tasks/assignments/activities. The office computerization is the most facilitating tool which helps the workforces in assisting the institutional activities like the record-keeping, record communication, and record maintenance. Thus, the present study offers certain recommendations as emerged from the findings and conclusion of the study. Also, the present study offers certain future recommendations along with implications for the stakeholders from diverse contexts by obtaining desired information about the application of digital literacies.

5.1 Recommendations

- The management of higher education is required to implement the digital literacies/technologies at each level in their concerned institutions.
- The training through expertise might be delivered to different workforces regarding the usages and implications of digital literacies.
- Institutional management is required to promote the digital environment in concerned institutions by focusing upon the advantages of advanced technologies.
- The digital literacy concerning office computerization, different seminars, and workshops

might be offered to workforces to make possible fast communication within and outside the institution.

The workforces might be encouraged to use the computers for their day-to-day activities at the workplace to make sure of the effective usages of digital literacies.

Mukramin Khan: Problem Identification and Theoretical Framework

Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest in this article's research, authorship, and publication.

References

- Appio, F. P., Frattini, F., Petruzzelli, A. M., & Neirotti, P. (2021). Digital transformation and innovation management: A synthesis of existing research and an agenda for future studies. *Journal of Product Innovation Management*, 38(1), 4-20
- Adèr, H., Mellenbergh, G., & Hand, D. (2008). *Advising on research methods: A consultant companion*. Huizen: Johannes van Kessel Publishing.
- Alkalai, E., & Amichai, H. (2004). Experiments with digital literacy. *Cyber Psychology*, 7(4): 425-434.
- Alkalai, Y., & Eshet, P. (2004). Digital Literacy: A Conceptual Framework for Survival Skills in Digital Era. *Journal of Educational Multimedia and Hypermedia*, 13(1), 93.
- Alkalai, Y., & Hamburger, Y. (2014). Experiments in Digital Literacy. *Cyber Psychology & Behavior*, 7(4), 421-429.
- Andrade, M., & Krishan, K. (2016). Curricular elements for learner success skills. *Journal of Education and Training Studies*, 4(8), 143-149.
- Applegate, L. M., Austin, R. D., & McFarlan, F. W. (2005). *Corporate information strategy and management: text and cases*. New York: McGraw-Hill.
- Aviram, A., & Alkalai, Y. (2006). Towards a theory of digital literacy: Three scenarios for the next steps. *European Journal of Open, Distance and E-Learning*. 22(4), 123-134.
- Banny, S. K., Churchill, D., & Thomas, K. F. (2017). Digital Literacy Learning in Higher Education through Digital Storytelling Approach. *Journal of International Education Research*, 13(1), 1-16.
- Barr, D., Harrison, J., & Conery, L. (2015). Computational thinking: a digital age skill for everyone. *Learning and Leading with Technology*, 38(6), 20-23.
- Bawden, D., & Haolow, H. (2008). Origins and Concepts of Digital Literacy in C. Lankshear, & M. Knobel, *Digital Literacies: Concepts, Policies and Practices* New York: Peter Lang Publishing.
- Becker, S., Pasquini, L. A., & Zentner, A. (2017). Digital Literacy Impact Study: An NMC Horizon Project Strategic Brief. Austin, Texas: The New Media Consortium.
- Black, J. A., & Champion, D. J. (1976). *Methods and issues in social research* / James A. Black and Dean J. Champion. Published, New York: Wiley, c1976.
- Buckingham, T., & David, K. (2007). *Beyond technology: Children's learning in the age of digitalculture*. Cambridge, UK: Polity.
- Bukar, M., & Shehu, I. (2014). The Effect of Computer Literacy on University Students' Attitude towards Computerized Record System. *Information and Knowledge Management*, 4(7), 51-56.
- Buzzetto, N., Elobeid, M., & Elobaid, M. (2017). *Assessing and addressing the digital literacy skills of first-generation college students*. Paper presented at The Annual Conference on Teaching Learning & Assessment, Philadelphia, PA, September 13-15.
- Calvani, A., Cartelli, A., Fini, A., & Ranieri, M. (2008). Models and instruments for assessing digital competence at school. *Journal of e-Learning and Knowledge Society*, 4(3), 183-193.

- Care, E., Griffin, P., Scoular, C., Awwal, N., & Zoanetti, N. (2017). Collaborative problem solving tasks. In P. Griffin and E. Care (Eds.), *Assessment and teaching of 21st century skills: Methods and approach* (85-104). Dordrecht: Springer.
- Christine, G., Julia, S., & Colin, A. (2016). *Education and Social Media: Toward a Digital Future*. MIT Press.
- Clark, W., Couldry, N., MacDonald, R., & Stephansen, H. (2014). Digital platforms and narrative exchange: Hidden constraints, emerging agency. *New Media & Society*, 17(6), 919-938.
- Cook, J., & Smith, M. (2004). Beyond formal learning: Informal community eLearning. *Computers & Education*, 43(1-2), 35-47.
- Cooper, D., & Schindler, P. (2008). *Business Research Methods*, USA, McGraw-Hill companies, Inc.
- Cope, B., & Kalantzis, M. (2000). *Multi-literacies: Literacy learning and the design of social futures*. London, UK: Routledge.
- Deursen, A., & Van, J. (2010). Improving digital skills for the use of online public information and services. *Government Information Quarterly*, (26): 333-340.
- Dewan, S., & Riggins, F. (2005). The digital divide: Current and future research directions. *Journal of the Association for Information Systems*, 6(12), 298-337.
- Dutton, H. W., Gillett, S. E., McKnight, L. W., & Peltu, M. (2004). Bridging broadband Internet divides: Reconfiguring access to enhance communicative power. *Journal of Information Technology*, 19(1), 28-38.
- Eshet, Y., & Alkalai, M. (2004). Digital Literacy: A Conceptual Framework for Survival Skills in the Digital Era. *Educational Multimedia and Hypermedia*, 13(1), 93-106.
- Fieldhouse, M., & Nicholas, D. (2010). Digital Literacy as Information Savvy: the road to information literacy (in C. Lankshear, M. Knobel (2008c) *Digital Literacies: Concepts, Policies and Practices*).
- Frolova, E., Rogach, O., & Ryabova, T. (2020). Digitalization of education in modern scientific discourse: New trends and risks analysis. *European Journal of Contemporary Education*, 9(2), 313-336.
- Fernández, A., Gómez, B., Binjaku, K., & Kajo Meçe, E. (2023). Digital transformation initiatives in higher education institutions: A multivocal literature review. *Education and Information Technologies*, 28(10), 12351-12382.
- Fraillon, J., Schulz, W., & Ainley, J. (2010). *International computer and information literacy study: Assessment framework*. Amsterdam: International Association for the Evaluation of Educational Achievement (IEA).
- Gillen, J., & Barton, D. (2009). Digital Literacies. A discussion document for Teaching and Learning Research Program: Technology Enhanced Learning workshop on digital literacies. Lancaster University, 12-13.
- Goode & Hatt. (1952-103). *Methods in social research*, McGraw- Hill Kogakusha.
- Goulao, M., & Fombona, J. (2012). Digital Literacy and adults' learners' perception: The case of a second chance to University, *Social and Behavioral Sciences*, 46, 350 – 355.
- Hartl, D., & Daniel, P. (2007). *Principles of Population Genetics*. Sinauer Associates. p. 95. ISBN 978-0-87893-308-2.
- Hobbs, R., & Martens, H. (2017). How media literacy supports civic engagement in a digital age. *Atlantic Journal of Communication*. 23 (2), 120-137.
- Howard, B., & Madalyn, O. (2014). [The Next Digital Divides](#). Teaching to Change. *The Serials Librarian*, 69 (1): 77-78.
- Jeffrey, L., Bronwyn, H., & Oriel, K. (2014). Developing Digital Information Literacy in Higher Education: Obstacles and Supports. *Journal of Information Technology Education*, 10, 383-413.
- Khalid, M., & Pederson, M. (2016). Digital exclusion in higher education contexts: A systematic literature review. *Procedia: Social and Behavioral Sciences*, 228, 614-621.

- Lankshear, C., & Knobel, M. (2006). *New Literacies: Everyday Practices and Classroom Learning* Maidenhead: Open University Press.
- Lankshear, C., & Knobel, M. (2012). *Digital literacies: concepts, policies and practices*: New York: Peter Lang.
- Marakas, G., Johnson, R., & Clay, P. (2007). The evolving nature of the computer self-efficacy construct. *Journal of Association for Information Systems*, 8(1), 16-46.
- Marc, P., & Rishma, P. (2004). Digital Natives and Digital Immigrants. *On the Horizon*. 9 (5), 1–6.
- Margaryan, A., & Littlejohn, A. (2008). Repositories and communities at cross-purposes: Issues in sharing and reuse of digital learning resources. *Journal of Computer Assisted Learning*, 24(4), 333-347.
- Maria, S., Hashemi, S., Lundin, M., & Anne, A. (2018). Digital competence and digital literacy in higher education research: Systematic review of concept use, *Cogent Education*, 5:1, 1519143.
- Mark, W., & Tina, M. (2010). New technology and digital worlds: Analyzing evidence of equity in access, use and outcomes. *Review of Research in Education*. 34: 179–225.
- Martin, A., & Grudziecki, J. (2006). Concepts and tools for digital literacy development, innovation. *Teaching and Learning in Information and Computer Sciences*, 5(4), 1-19.
- Martin, A., & Rader, H. (2013). *Information and IT literacy: enabling learning in the 21st century* London: Facet.
- Martin, J., & Anderson, C. D. (2000). Information and misinformation online: Recommendations for facilitating accurate health information retrieval and evaluation. *Cyber Psychology & Behavior*, 3, 731-746.
- Mashau, P., & Andrisha, B. (2016). Effect of modern office technology on management performance. *Problems and Perspectives in Management*, 14 (2), 376-84.
- McGuinness, C., & Fulton, C. (2019). Digital literacy in higher education: A case study of student engagement with e-tutorials using blended learning. *Journal of Information Technology Education: Innovations in Practice*, 18, 1-28.
- Meyers, E., Erickson, I., & Small, R. V. (2013). The digital literacy and informal learning environments: An introduction. *Learning, Media and Technology*, 38(4), 355-367.
- Milbrath, Y. L., & Kinzie, M. B. (2006). Computer technology training for prospective workforces: Computer attitudes and perceived self-efficacy. *Journal of Technology and Teacher Education*, 8(4), 373-396.
- Murray, M. C., & Perez, J. (2014). Unravelling the digital literacy paradox: How higher education fails at the fourth literacy. *Issues in Informing Science and Information Technology*, 11, 85-100.
- Nancy, L., David, W., Jimmy, T., Wong, U. (2018). Centre for information technology in education: A global framework of reference on digital literacy skills for indicator. University of Hong Kong. Information Paper No. 51.
- Nataraj, G., & Sam, K. (2015). The Need for an Introductory Computer Literacy Course at University Level. *International Journal of Business Management & Economic Research*. 5 (4), 71–3.
- Nicholas, B., & James, E. (2008). *The Blackwell Companion to Philosophy*. John Wiley & Sons. ISBN 978-0-470-99787-1.
- Osakwe, R. N., & Lawra, K. (2012). The problems and prospects of using information and communication technology for record keeping. *Journal of Education and Practice*, 3 (14), 39-43.
- Phuapan, P., & Kaplan, K. (2010). The Conditions and Problems of Digital Literacy Skill Development of Students in Public Higher Education Institutions. *The Quarterly Journal of Economics*, 76, 223-233.
- Santos, A., & Sandro, S. (2017). The Importance of Promoting Digital Literacy in Higher Education. *International Journal of Social Science Studies*, 5 (6), 90-93.

- Saunders, M., Lewis, P. & Thornhill, A. (2012). Research methods for business students, 7^{ed.}, England, Pearson education limited.
- Sekaran, U. (1999). Research methods for business: A skill-building approach. 3rd ed. John.
- Sekaran, U., & Bougie, R. (2013). Research Methods for Business: A Skill-Building Approach (6th Ed.). John Wiley and Sons, Inc.
- Smeda, N., Dakich, E., & Sharda, N. (2014). The effectiveness of digital storytelling in the classrooms: a comprehensive study. *Smart Learning Environments*, 1(1), 1-21.
- Tabachnick, B. G., & Fidell, L.S. (2007). *Using Multivariate Statistics*, 5th Edition. Boston: Pearson Education, Inc./Allyn and Bacon.
- Wilson, B. G., Hardman, S., Thornam, C. L., & Dunlap, J. C. (2004). Bounded community: Designing and facilitating learning communities in formal courses. *The International Review of Research in Open and Distance Learning*.
- Wilson, M., & Scalise, K. (2015). Assessment of Learning in Digital Networks. In P. Griffin and E. Care (Eds.), *Assessment and teaching of 21st century skills: Methods and approach*. (57-81). Dordrecht: Springer.
- Yoram, E., & Alkalai, E. (2004). Digital Literacy: A Conceptual Framework for Survival Skills in the Digital Era. *Journal of Educational Multimedia and Hypermedia*, 13(1), 93-106.
- Yuksel, P., Robin, B. R., & McNeil, S. (2016). *Educational uses of digital storytelling around the world*. Paper presented at Proceedings of Society for Information Technology & Teacher Education International Conference.