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## Investing Digital Information Literacy in relation with Demographic Factors: A Case of Women in Pakistan

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**INVESTIGATING DIGITAL INFORMATION LITERACY IN RELATION WITH  
DEMOGRAPHIC FACTORS: A CASE OF WOMEN IN PAKISTAN**

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### Abstract

The present study aims to assess the relationship between demographic factors and the digital information literacy skills of women in Pakistan. Quantitative research approach was employed and data was collected through a questionnaire containing 12 items, adopted from *Digital Information Fluency Model* developed by Sarah A. Collins, Leanne M. Currie, Suzanne Bakken, David K. Vawdrey and Patricia W. Stone. All the items of the scale scored good internal consistency (Cronbach's  $\alpha=.905$ ). The self-reported survey questionnaire was hosted online and its link was shared with the participants through different digital means. A sample of two hundred and ninety one female (N= 291), living in the Punjab province of Pakistan, participated in the study. Among 291 women, 161 (55.3%) were in the age bracket of 19-30 years old. 101 (34.7%) were married and 118 (40.6%) were having at least 14 years of education. The correlations between the digital information literacy skills and the factors like, age, education, marital status and urban/rural location were examined. The results of this study determined that a large sample perceived that they had significant level of the digital information literacy skills and were able to ascertain, locate, collect, evaluate and ethically use the available digital information. The results also portray that factors like age, urban/rural location, and marital status had no significant impact on the DIL competencies. Whereas, the factors like education and occupation, have significant impact on the respondent's digital and information literacy skills. Moreover, the study highlights workable suggestions for the improvement of DIL competencies of women in Pakistan.

*Key Words:* digital and information literacy, demographics, women, Pakistan, digital literacy, digital fluency

### **Introduction**

Technological transformation and the penetration of internet into Pakistani society is changing the traditional life styles of the masses and affecting many facets of their day to day activities(Arif, 2018; Saeed, Rohde, & Wulf, 2008; Sattar, 2007). These far-reaching changes are altering the ways of people's relationships with their families, interactions with their friends, shopping patterns, political participation, civic engagements, financial transactions and procurement of knowledge in the country(Arif, 2018; Saeed et al., 2008). However, this growing digitization of world demands more digitally literate citizen who can perform their jobs in sagacious manners and utilize the available technologies for the attainment of their goals in skillful manners. Therefore, new competencies which, according to United Nations, are popularized as the 21st century skills, are needed by the people around the globe to get more technological advantages, and Pakistanis are no exception(UNESCO, 2021; Whitworth, 2016). Researchers have established the facts that modern citizens regardless of their professions must be empowered with the digital literacy skills to be engaged citizen (Meyers, Erickson, & Small, 2013). Digital literacy is a skillset to appropriately use digital technology and communication tools to solve information related problems in order to perform their functions properly and survive and thrive in an information society(Artal, 2008; Buckingham, 2010; Fraillon, Ainley, Schulz, Friedman, & Gebhardt, 2013; Katz, 2007; Katz & Macklin, 2004; Sparks, Katz, & Beile, 2016). Digital literacy is the ability to understand and use the digital information available in multiple formats accessible through a variety of digital sources (Carrington & Robinson, 2009).This includes having the ability to use technology as a tool to research, organize, and communicate information and having a fundamental understanding of the ethical and legal issues

surrounding retrieving and consuming information (Meyers et al., 2013; Mihailidis, 2018; Papaioannou, 2011).

Research has established that digital transformation of societies and accelerated penetration of Information and Communication Technologies is going to play very important role in the progression of modern citizenry (Burnett & Merchant, 2011; Course, 2016; Domine, 2011; Hargittai, 2008; Whitworth, 2016). Digital and Media literacy has the potential to transform not only the lives of individuals but the society as a whole (Mihailidis & Viotty, 2017; Sauerteig, Gutierrez, Toven-Lindsey, & Dahl, 2019). In order to grasp the new opportunities that the digital technologies are providing, individuals have to continuously update their skills to match rapid technological developments (Buckingham, 2010; Fortuna, 2015; Fraillon et al., 2013; Livingstone & Bober, 2004). Digital literacy is occasionally used as synonymous term with the terms like digital information literacy digital information fluency, ICT literacy ICT competence, web literacy, 21<sup>st</sup> century skills, new literacy practices, information competence, digital competence, computer literacy, and media literacy (Bawden, 2008; Buckingham, 2010; Checa-Romero, 2016; Gee, 2018; Hisrich & Blanchard, 2009; Katz, 2007; Katz & Macklin, 2004; Mason & Manzoor, 2017; Sparks et al., 2016). Massive amount of information evolution in multiple formats is posing challenges in evaluating, understanding and using information for individuals and it has become the “survival skill” in the present information age (Bawden, 2001; Buckingham, 2010; Checa-Romero, 2016; Fortuna, 2015; Fraillon et al., 2013; Livingstone & Bober, 2004; Potter, 2010; UNESCO, 2021; Whitworth, 2016).

Literature reported strong relationship among socio-demographic factors and digital literacy or internet use and access of different population groups. Such as Realo, Siibak and Kalmus (2011) predicted younger age and educational level are significantly related to internet

use frequency. While investigating internet access, Estacio, Whittle and Protheroe (2017) stated that education, age and income level of individuals also predict access to internet. Another study while investigating the social networking sites adoption factors found that socio-demographic factors reflects on the access and use of internet or social media sites (Haight, Quan-Haase & Corbett, 2014).

Researchers have reported that since 1980's many studies have been conducted in the world to explore the differences between girls and boys in computer access, use, abilities and attitudes(Punter, Meelissen, & Glas, 2016), but, unfortunately, this dimension of technological gaps, on the basis of gender differences have rarely been studied in the context of Pakistan. The research in this area mainly focused on the perceived gender gap in computer attitudes such as liking computers, perceived usefulness of computers, self-confidence in computer use and anxiety in using computers (Chang et al., 2011; Gebhardt, Thomson, Ainley, & Hillman, 2019; Punter et al., 2016). Likewise, information literacy as an umbrella term encompass computer competencies and competencies like skillfully searching, evaluating and processing information is important for male and female both (Fraillon et al., 2013; Punter et al., 2016). With the easy availability of new media technologies, computers, and the internet, the gender based 'digital literacy skills gap' is being reduced (Lau & Yuen, 2015). Results of some recent research studies inform that women are now showing more positive computer attitudes than male participants(Punter et al., 2016). For example, results of a study conducted in the US to measure computer attitudes among eighth grade students depicted that girls were more positive about computers than boys (Hohlfeld, Ritzhaupt, & Barron, 2013). A study among Taiwanese students informed that there were no gender differences in students' self-efficacy related to the internet usage and online communication(Tsai & Tsai, 2010). However, with regard to self-efficacy in

ICT use and ICT competencies, the some researchers have reported mixed results (Punter et al., 2016).

The above discussion highlights the importance of digital information literacy skills in the 21<sup>st</sup> century and in the same spirit this study is designed to assess the relationship of in digital information literacy skills of women in Pakistan in connection with their demographic factors. Many researches have been conducted on this issue around the globe (Artal, 2008; Camarero, 2019; Livingstone & Helsper, 2010; Punter et al., 2016; UNICEF, 2017) but in the context of Pakistan, literature lacks the data which reflects the relationship that digital information literacy has with the demographic factors of women. According to the 2018 census, women are the 48.5 % of the overall population in Pakistan(The World Bank, 2021). In today's Pakistani society, in which the internet and the social use of smartphones and tablets are becoming part of majority's everyday life, it has become even more important to study how female are using and developing their digital literacy skills (Ahmed & Rehman, 2016; Ainley, Schulz, & Fraillon, 2016; Fraillon et al., 2013; Gebhardt et al., 2019; Hassan, Unwin, & Gardezi, 2018; Mihailidis, 2018; Raza, Khan, & Shahbaz, 2019). Therefore, present research paper aims to put an empirical spotlight on the phenomenon and study it in detail by using the quantitative research approach.

### **Methodology**

The objective of the present study is to assess the digital and information literacy skills of women and explore its relationship with the demographic factors. For this purpose, researchers used quantitative research method, suitable in determining behaviors and attitudes of individuals towards any particular phenomenon (Arthur Asa Berger, 2016; Creswell & Creswell, 2018; Williams, 2007). To explore the influence of respondents' demographic factors, a questionnaire was developed with the help of past research and chiefly adapted from the *Digital Information*

*Fluency Model* developed by Sarah A. Collins, Leanne M. Currie, Suzanne Bakken, David K. Vawdrey and Patricia W. Stone at Illinois Mathematics and Science Academy (Heine, Barr, O'Connor, & McNabb, 2006). The final survey questionnaire was based on 2 main segments i.e. demographic questions, and digital information literacy (DIL) skills questions. The DIL scale contained 12 items and all the items achieved good internal consistency (Cronbach Alpha .905). Researchers asked the respondents to rate their DIL skills on Likert type scale with the options given in the scale from “Not at all” to “To a great extent” for measuring DIL skills which is coded as : (Not at all=1, To little extent=2, To some extent=3, To a moderate extent=4, To a great extent=5). The female residents of Punjab were selected as the target population for this study. The technique of simple random sampling (convenience) was used to fetch data from the respondents. Online questionnaire was sent to the participants through emails, Whatsapp and posting on Facebook groups. After repeated follow up online messages, 314 responses were received and finally 291 useable responses were used for the analysis and interpretation purposes.

### Results and Discussion

Among the 291 participants, 161 (55.3%) women were in age bracket of 19-30 years old. 101 (34.7%) were married and 118 (40.6%) were having at least 14 years of education. The detail of the demographic factors is presented in the Table 1 below:-

Table 1

*Demographic Characteristics of the Participants (N=291)*

<b>Variables</b>	<b>F (N=291)</b>	<b>(%)</b>
<b>Age</b>		
18 and less than 18 years	77	26.5
19 years – 30 years	161	55.3
31 years – 40 years	34	11.7
41 years – 50 years	16	5.5
51 years and above	3	1.0

**Monthly household income**

Less than 40,000 rupees/ month	38	13.1
41,000 - 80,000 rupees/ month	114	39.2
81,000 - 120,000 rupees/ month	84	28.9
121,000 - 160,000 rupees/ month	51	17.5
More than 160000 rupees/ month	4	1.4

**Education**

Matric or below	64	22.0
Intermediate/ FA / F.SC.	109	37.5
Bachelor's Degree	77	26.5
Master's Degree	41	14.1

**Which of these best describes the general area where you live?**

Urban	219	75.3
Rural	70	24.1
Prefer not to say	2	.7

**Marital Status**

Unmarried	188	64.6
Married	101	34.7
Divorced	2	.7

**Occupation**

Student	194	66.7
Employee	56	19.2
Housewife	33	11.3
Businesswomen	8	2.7

Furthermore, findings of the survey highlighted that majority of the respondents N=202 (69.4%) scored between  $\leq 51\%$  -  $\geq 89\%$  on the scale (12 items), with a maximum score of 60 and minimum score of 12, reflecting *Very Good* or *Good* grades. Out of the total 291 participants, 75(25.77%) scored  $\leq 90\%$ , showing *Excellent* grade on digital and information literacy survey scale as per the set criteria. Only 4(1.37%) depicted *poor* grades. Detail is shown in the Table 3 below.

Table 3

**Overall Digital and Information Literacy Levels of the Participants (N=291)**

DIL Level	Participants (n=291) f (%)	Grading Criteria	Std. Deviation	Mean
Excellent	75(25.77)	$\leq 90\%$		
Very Good	133(45.7)	$\leq 71 - 89\%$	8.71	46.8
Good	69(23.7)	$\leq 51-70\%$		

Satisfactory	10(3.44)	≤41-50 %
Poor	4(1.37)	40 % or Less

The main purpose of the study was to investigate the impact of the demographic factors on the digital and information literacy skills of women in Pakistan. The computed mean value (mean=46.8) of DIL skills marked that participants of the study perceived that they were good in their DIL skills not “to a great extent” but to a “moderate extent”. They considered themselves digitally literate because they considered themselves to be able to 1) look for information 2), find information, 3) get information, 4) evaluate information and 5) use information sagaciously and ethically on the digital networks. This study is aligned with Dunning Kruger effect which elaborates that poor performers in many areas are generally ignorant of how deficient they are in their proficiency which not only leads them to make mistakes even stops them from knowing that they are making mistakes(Cherry, n.d.; Dunning, 2011; Ehrlinger, Johnson, Dunning, Kruger, & Banner, 2006; Kruger & Dunning, 1999) .

Although the results identified good level of DIL skill among the participants, however results indicate average skills level in applying advanced search options. These results confirm the finding of Weber , Hillmert and Rott that reported low level of skills among women in modifying their search queries by using advanced search options( Mukherjee, Ilavarasan & Kar, 2019; Weber, Hillmert, & Rott, 2018). The findings establish the importance of advanced DIL skills and suggest the DIL trainings for women to develop them as independent learner. Supporting the same findings Krishnamurthy and Shettapanavar stressed on the role of library professionals to provide guidance to female students towards applying advanced search strategies and developing digital literacy skills among them(Krishnamurthy & Shettappanavar, 2019). The finding of the study revealed that demographic factors like age, education and

income had no significant impact on the DIL skills of participants. Whereas, only occupation significantly impact on the DIL skills of the participants as shown in the table 4 below.

Table 4

*One-way ANOVA analysis of Occupation on DIL measures*

<b>Multiple Comparisons</b>						
Dependent Variable: Compute_DIL						
LSD						
(I) Occupation	(J) Occupation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Student	Employee	-2.71981*	1.34764	.045	-5.3723	-.0673
	Housewife	-1.85942	1.67284	.267	-5.1520	1.4332
	Business	-2.41624	3.20501	.452	-8.7245	3.8921
Employee	Student	2.71981*	1.34764	.045	.0673	5.3723
	Housewife	.86039	1.94959	.659	-2.9769	4.6977
	Business	.30357	3.35777	.928	-6.3054	6.9125
Housewife	Student	1.85942	1.67284	.267	-1.4332	5.1520
	Employee	-.86039	1.94959	.659	-4.6977	2.9769
	Business	-.55682	3.50098	.874	-7.4477	6.3340
Business	Student	2.41624	3.20501	.452	-3.8921	8.7245
	Employee	-.30357	3.35777	.928	-6.9125	6.3054
	Housewife	.55682	3.50098	.874	-6.3340	7.4477

\*. The mean difference is significant at the 0.05 level.

### Conclusion

In recent years, research related to digital literacy has grown exponentially. One reason for this is, nowadays, digital skills are becoming essential in a range of disciplines and professional occupations and in different aspects of people's lives. Thus, being technologically savvy or competent has become the 'must have' skill in our society. In the case of adolescents, another reason is some scholars suggest that we must train minors in digital skills and make them digital literates, as a prevention tool against the risks of digital technologies. Thus, through this

training, they could become digitally literate and more competent and confident in the digital environment. In this regard, when experts talk about risks of digital technologies they usually refer to cyberbullying, sexual harassment or grooming, exposure to pornography and violence, sexting, contact with strangers and impersonation. The major problems arising from these risks are their psychological consequences that could affect their health and their quality of life. Thus, many studies reported the existence of a link between suffering cyberbullying and suffering anxiety, depression, stress, sleep disturbance, feelings of anger and frustration, irritability, suicidal ideation, suicide attempts and even suicides. Similar types of effects have been linked to emotional distress, anxiety, depression and eating disorders. And with reference to exposure to sexually explicit online material, it is related to recreational attitudes toward sex, notions of women as sex objects, body dissatisfaction, stimulation of sexual preoccupation and reduction of sexual satisfaction. Overall, the results indicate that selected women had significant level of DIL skills or were able to identify, find, gather, and ethically use digital information. They believed that they were efficiently able to locate, find, get, evaluate and use digital information. So, it can be concluded that study participants were digitally literate or were capable of DIL skills. These findings may be due to the good educational level and urban living of respondents. It may also be assumed that majority of the respondents had good income level, so, it was possible for them to easily or regularly access digital devices (mobile, laptops etc.) which may cause their good digital information literacy skills.

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