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REQUIREMENTS FOR THE DIGITAL EMPOWERMENT OF RURAL WOMEN IN SOME VILLAGES OF AL-GHARBIA GOVERNORATE

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ABSTRACT

This study examines the current state of digital empowerment among rural women, the level of the participants' knowledge regarding the educational, training, social, and environmental requirements for their digital empowerment, as well as the significance and relevance of the relationship between certain characteristics of the study participants and their level of knowledge regarding the requirements for their digital empowerment and its importance. Additionally, Survey examines the regression model between the characteristics of the study participants and their level of knowledge regarding the requirements for their digital empowerment and its importance. A total of 367 rural girls and women participated in the study. Frequencies, percentages, arithmetic mean, weighted arithmetic mean, standard deviation, Cronbach's alpha, simple correlation (Pearson), t-test, F-test, multiple correlation coefficient, and standard partial regression were used in the data analysis. Statistical analyses revealed that 72.8% and 76.3% of the respondents demonstrated a low to moderate level of knowledge regarding the requirements of digital empowerment and the importance of those requirements. Significant differences were found based on the respondent's employment status and family type, with working respondents and those from single-parent families showing higher values. Additionally, the respondent's age and education, monthly household income, membership in organizations, leadership, cognitive interaction, and innovativeness, positively contributed to the variation in knowledge of the requirements (educational, training, social, and environmental) and their importance.

KEYWORDS: Empowerment – Digitalization – Rural women.

1. INTRODUCTION

Based on contemporary developments and the rapid shift toward a digital world, digital technology has permeated all aspects of academic and professional life and is now integral to numerous life skills. As one of the most widespread fields, it has become indispensable for keeping pace with the times, scientific progress, and the march of development. This shift has prompted educational institutions to adapt their curricula, emphasizing digital literacy and technological proficiency. As a result, individuals are better equipped to navigate the complexities of the modern workforce and engage effectively in a globally connected society.

This has prompted countries to reconsider their national strategies with a view to adopting digitalization to contribute to the development of the family and society. Consequently, women's issues and development have occupied a prominent position within the new formulations of the concept of development. This emphasis on digital empowerment aims to bridge gender gaps in technology and innovation, enabling women to actively participate in shaping their communities and economies. By fostering access to digital resources and education, the initiative aspires to create a more equitable and inclusive environment for future generations (Wafa Taweel, 2023, p. 28). In addition to UN Women's efforts to empower women through comprehensive sustainable development that encompasses social, economic, environmental, and technological dimensions. Consequently, we see that the recognition of women as an active element in society, with their own distinct role and influence alongside men, has become a reality. which has prompted the Egyptian state to work toward involving women in various fields and opening doors for them, recognizing their contribution to the development of society in general and the family in particular, as women's empowerment through technology impacts all aspects of life (Zaki, 2021, pp. 104, 105). As individuals become able to access and make use of information, knowledge liberates them from ignorance, empowers them, and sets them on a steady path toward self-discovery, broadening their horizons, understanding reality with confidence, and making decisions that improve their well-being on the one hand and contribute to the development of society on the other (Al-Wail, Abdulsalam, 2024).

These advancements not only improve living standards but also foster innovation and resilience within communities. As a result, the holistic development approach encourages sustainable practices that ensure long-term benefits for future

generations. The 2004 Human Development Report issued by the United Nations emphasized the necessity of involving women in societal development to achieve progress, as there can be no societal development in isolation from women. This underscores the close link between development and women's empowerment. This was confirmed by Shandi's (2019, pp. 1,2) study, which stated that any development without women's participation is limited and lopsided, using only one leg to stride toward progress and advancement.

Based on the foregoing, women's contribution to development in all spheres of life is founded on viewing them as an active and dynamic group, not as a passive and beneficiary group (Aisha Fashika, 2016, p. 125). Women constitute half of society in terms of composition and influence the formation and development of the entire society. How could it be otherwise, when she is the mother, wife, sister, caregiver, teacher, and worker? She engages in the affairs of building and contributes to the development of her family and community, making an effective and vital contribution. By fostering an environment that values equality and promotes women's rights, communities can unlock the full potential of their populations. This shift not only enhances individual lives but also contributes to broader economic growth and social cohesion. (Al-Aa Barani, 2020).

By fostering an environment where women can thrive, communities are likely to experience enhanced innovation, improved decision-making, and equitable resource distribution. Ultimately, empowering women not only benefits them individually but also catalyzes broader societal progress and resilience. Digital empowerment of women is closely tied to social, economic, and environmental aspects, as its impact is not limited to improving the conditions of women as a social group but extends to society as a whole. Empowering women by granting them equal opportunities alongside men is something the United Nations views as a fundamental human right and a necessity for achieving social integration. This has prompted many organizations, including the Arab Women's Organization, to work on drafting a UN charter titled "Digitalization for All." Accessing daily necessities such as healthcare, education, and social, economic, and financial services can be extremely difficult for those living in remote or underserved areas, This places women, as mothers and wives, in a precarious position if they lack the digital skills and competencies required. If digital empowerment is important and necessary at all times, it is even more

critical in navigating this era (Kara Kirby, 2016, p. 1), (Madra Magdalena et al, 2020, p. 1), (Samihah Muhammad, Hind Muhammad, 2024, p. 6801), Many studies and research papers have recommended the need to provide the necessary foundations for women's digital empowerment, including the study by Costa et al. (2018, p. 150), UNESWA (2018, p. 82), (Al-Aa Barani, 2020). Furthermore, a study by the World Bank (2020) emphasized the need to promote digital literacy in society at large to digitally empower its members. This emphasizes how crucial it is to work toward creating the conditions necessary for women's digital empowerment, as they are trusted with carrying out their duties to their families and the advancement of their community.

A study by Hufada, et al. (2019, p. 276) also confirmed that, through digitalization, women develop a sense of empowerment and contribute to social change by connecting with others, exploring alternative ways of living and working, building a social voice to express themselves, and moving forward. Furthermore, digital literacy and technological skills have spread rapidly in rural areas, and most women, as agents of community empowerment, do not seek advanced degrees; Instead, they acquire knowledge from current technological developments, effectively using digital devices for learning and work to access resources and interact with other stakeholders.

1.1. Research Problem

The world has witnessed rapid progress in the adoption and use of digital technology; however, this progress is not occurring equally between the sexes. According to 2023 estimates, the percentage of internet users among men globally reached 68%, surpassing the 63% rate among women (World Bank, 2023). A similar gap is evident in mobile phone usage. A 2020 World Bank report noted that the number of women using the internet in low- and middle-income countries is 300 million fewer than men, representing a 20% gender gap. Even when women own mobile phones, their use of these devices to access government services (health, education, social, financial, and cultural) is very low compared to men (Al-Aa Barani, 2020).

Studies by Sangeetha Subramaniam, Aiswarya Satheesh (2025, p. 50), and Dhanamalar, et al. (2020, p p, 107- 112) have also confirmed that women in urban areas use digital technology to meet their daily essential needs. Meanwhile, women in rural areas lag far behind in the field of digital technology.

The situation is not much different in Arab countries. The Digital Trends in the Arab Region

report noted that women's internet access is lower in the Arab world compared to the rest of the world, with women's personal internet usage standing at 45.6% in the Arab region, while the global rate is 51.4%. There is also a disparity in digital access rates between males and females: globally and in the Arab world, the rate for males was 61.3% and 55.2%, respectively, while for females it was 48.3% and 47.3%, respectively (Zaki, 2021, p. 105).

"89% of Egypt's youth use the internet, according to reports, which is a clear sign of how common digital technology is. Nonetheless, there is a notable difference between the ownership and usage of digital devices between men and women, with a 17% overall digital divide. There is an 8% gap in access to the digital world." This means that women face structural, economic, or geographical barriers that prevent them from accessing digital devices or the internet, as well as digital illiteracy and a lack of the technical skills needed to use modern technology,

women's mobility or participation in the digital sphere, customs, traditions, prejudices, unfavorable attitudes, and a negative societal perspective that minimizes the significance of women's use of digital technology.

(Central Agency for Public Mobilization and Statistics, 2022). (National Telecommunications Regulatory Authority, 2023)

As a result, according to the state's program, which it has included among its commitments to be fulfilled, one of the most significant objectives it seeks to accomplish is the digital empowerment of women. Because women's participation in. Because women's participation in society is essential to transformation and sustainable development, the state places a high priority on women's. This has led to the need to prioritize this participation and work to integrate it into the fabric of daily life. Considering the state's ongoing efforts to support women in the field of digital technology and its prioritization of women (Hajira Tumi, 2024, p. 255).

Considering the above, this study seeks to answer the following questions:

- What is the current state of digital empowerment among rural women?
- What are the requirements for digital empowerment (educational, training, social, and environmental) for rural women?
- What is the degree of importance of the requirements for digital empowerment (educational, training, social, and environmental) for rural women?

1.2. Significance of the Research

This research is significant because it is in line with the Egyptian government's plans for digital transformation, which have affected every aspect of life. It also gives decision-makers a list of requirements for achieving digital empowerment for women, which directly affects how well they carry out their responsibilities and roles in their families and encourages their active participation in the creation and advancement of their society, where women and girls make up nearly 60% of the population. (United Nations, 2023), so that they can work to meet these requirements by establishing appropriate strategies, mechanisms, and policies, which will positively enhance their capacity for digital connectivity to achieve economic and environmental growth, social inclusion, and improved quality of life in rural areas. There is a strong and inseparable link between digital empowerment and the ability to acquire knowledge and culture, keep pace with the expansion of knowledge, achieve progress and adaptation, and take advantage of available opportunities to improve lives.

1.3. Research Objectives:

- 1- Assess the current state of digital empowerment among the female participants.
- 2- determine the participants' level of knowledge regarding the educational, training, social, and environmental requirements for their digital empowerment.
- 3- identify the participants' views on the importance of these requirements (educational, training, social, and environmental) for their digital empowerment.
- 4- determine the relationship between the independent variables studied among the female respondents and their level of knowledge regarding the educational, training, social, and environmental requirements for their digital empowerment.
- 5- determine the relationship between the independent variables studied among the female respondents and their views on the importance of the requirements (educational, training, social, and environmental) for their digital empowerment.
- 6- determine the regression relationships between the independent variables studied for the research subjects collectively and their level of knowledge regarding the requirements (educational, training, social, and environmental) for their digital empowerment.
- 7- determine the regression relationships between the independent variables studied for the research participants collectively and their views on the

importance of the requirements (educational, training, social, and environmental) for their digital empowerment.

1.4. Research Hypotheses:

To achieve Objectives 4, 5, 6, and 7, the following hypotheses were formulated:

1- There is a significant relationship between the independent variables studied in the research, namely: age, the respondent's education, current attitude toward education, the respondent's employment status, family type, family size, ownership of digital devices, monthly household income, size of agricultural holdings, cognitive interaction, informal social participation, membership in organizations, leadership, innovation, number of hours of digital technology use per session, level of digital technology use, degree of reliance on digital technology, and their level of knowledge regarding the educational, training, social, and environmental requirements for their digital empowerment.

2- There is a significant relationship between the studied independent variables and the respondents' views on the importance of educational, training, social, and environmental requirements for their digital empowerment.

3- The studied independent variables contribute significantly to explaining the overall variance among the female respondents regarding their level of knowledge of the educational, training, social, and environmental requirements for their digital empowerment.

4- The independent variables studied make a significant contribution to explaining the overall variance among rural women regarding their views on the importance of educational, training, social, and environmental requirements for their digital empowerment.

To test the validity of these hypotheses, they were formulated in their null form, which states that there is no relationship.

Scientific and Procedural Concepts:

Empowerment: This refers to an individual's acquisition of the ability to control their life, act, and plan-whether for their own benefit or that of the rest of society-as well as the capacity to assert and have their rights and freedoms respected, and to address problems and find solutions to them (Al-Nadwi, 2019, p. 43). Empowerment means making an individual stronger and more confident (Oxford Dictionary, 2020).

Meanwhile, women's empowerment is defined as

women's possession of resources and their ability to utilize and manage them with the aim of achieving a set of accomplishments for the advancement of the individual and society (Hajira Tumi, 2024, p. 257).

Digital empowerment: Buket (2011, p. 35) states that digital empowerment is an individual's ability to make productive and effective use of digital technologies, tools, and media to develop life skills and utilize them to their full potential, thereby enhancing their digital capabilities within a knowledge and information society.

It is also a process of gaining control, power, and awareness, and making strong strategic decisions to enable the individual to make the most of digital technology and achieve technical proficiency and the ability to control their own life activities (Wafa Taweel, 2023, p. 28).

Digital Empowerment of Women: In order to create opportunities that lead to a better life and enable women to participate effectively, it is important to assist women in gaining access to digital technology tools and to recognize the importance of using them in all aspects of using them in all aspects of life through the development of personal capabilities and skills. (Amal Ateiba, 2020, p. 352). Women acquiring the maximum level of digital technology skills and reaching a level of proficiency that allows them to benefit from its various applications (Samihah Muhammad, Hind Muhammad, 2024, p. 6775).

In this study, the digital empowerment of rural women refers to: enhancing the strength, knowledge, and culture of rural women, and refining their skills regarding their family and community roles and tasks, which have taken on a digital form, thereby making them more competent, capable, in control, flexible, and effective in their performance. This

necessitates providing the requirements necessary to achieve digital empowerment.

Requirements for Digital Empowerment: Hooft (2019, pp. 30-32) classified digital requirements into four broad categories, including operational, information navigation, social, and creative requirements. While the first two categories deal with the technical and cognitive requirements and skills for using computers and the internet, such as searching for, finding, and comprehending information online, the latter two categories deal with the capacity to communicate and interact online, establish digital social connections, and produce and distribute high-quality content online.

In this study, the term "digital empowerment requirements for rural women" refers to: (1) educational and training requirements, (2) social requirements, and (3) environmental requirements.

2. RESEARCH METHODOLOGY

2.1.First: Scope of the Study:

(1) Geographic Scope: The study was conducted in Gharbia Governorate, which was randomly selected from among the 27 governorates of the Arab Republic of Egypt. One district was then randomly selected from among the governorate's eight districts, and the choice fell on the district of: Tanta. Three villages were selected randomly, namely: Mahalla Marhum, Sabra, and Dafra, in that order.

(2) Demographic Scope: The total number of females in the three villages in the 20-35 age group was 17,290 rural girls and women (Information and Decision Support Center, Gharbia Governorate, 2026). Using the Stephen Thompson formula, a random sample was selected from them, resulting in a sample size of 367.

Table 1: Number of female respondents according to the research sample.

The Center	The Village	Total number of females	Sample size
TANTA	Marhum Neighborhood	7,347	160
	Sperbay	5,835	127
	Dafra	4,108	89
Total		17,290	367

Source: Information and Decision Support Center, Gharbia Governorate, unpublished data, 2026.

(3) Timeframe: A questionnaire was used to gather data, and participants were interviewed in person in September and October of 2025.

Second: Data Collection Tool: A questionnaire was used, that was designed to align with the study's

objectives. The questionnaire was reviewed, finalized, and modified as necessary following a pilot test.

Third: Research Variables and How They Were Measured: The research variables were measured

and processed for statistical analysis as follows:

(1) Knowledge of educational, training, social, and environmental requirements: This was measured by surveying the respondents' opinions on 64 statements divided into three categories: educational and training (16 statements), social (26 statements), and environmental (22 items), using a two-point scale of "know" and "do not know," with scores of 2 and 1, respectively. The Cronbach's alpha coefficient for testing the reliability of the scale for educational, training, social, and environmental requirements was calculated and found to be 0.762, 0.784, 0.808, and 0.904, respectively. These are high values indicating the scale's reliability. The total score was calculated to reflect the participants' overall knowledge of educational, training, social, and environmental requirements, with the aim of empowering them digitally. The arithmetic mean of the scale scores was 24.75, 39.47, 31.77, and 96.82, with standard deviations of 3.668, 4.993, 4.737, and 13.200, respectively.

(2) The importance of educational, training, social, and environmental requirements: This was measured by surveying the participants' opinions on 64 requirements, following a question about their awareness of them, using a scale consisting of four response options: very important, somewhat important, somewhat unimportant, and not important. Scores of 4, 3, 2, and 1 were assigned in that order. The Cronbach's alpha coefficient for testing the reliability of the scale measuring the importance of educational, training, social, and environmental requirements was calculated and found to be 0.920, 0.954, 0.962, and 0.980, respectively. These are high values indicating the scale's reliability. The total score was calculated to reflect the respondents' level of knowledge regarding educational, training, social, and environmental requirements overall, with the aim of digitally empowering them. The arithmetic mean of the scale scores was 39.44, 63.82, 49.91, and 156.11, with standard deviations of 10.023, 15.614, 14.473, and 42.982, respectively.

Fourth: Statistical Analysis Methods: Percentages,

frequencies, arithmetic mean, weighted arithmetic mean, standard deviation, simple correlation coefficients (Pearson), ascending multiple linear regression, and Cronbach's alpha reliability were used.

Fifth: Validation of Instruments: Assessing the Validity and Reliability of the Questionnaire:

(1) - Validity: The validity of the instruments was assessed using two methods:

(a) Content Validity: "A number of knowledgeable professors in the fields of agricultural extension and rural society were shown the preliminary version of the questionnaire in order to get their feedback on the linguistic formulation, appropriateness of the statements for the questionnaire, and their suitability for the intended purpose. and modifications were made based on the reviewers' feedback, with a minimum agreement rate of 90% per statement.

(b) Construct Validity: Construct validity was calculated by determining the Pearson correlation coefficient between the total score of each item and the total score of the questionnaire. Table (2) illustrates this:

-Knowledge of the requirements for the digital empowerment of rural women

The results in Table (2) show that there is a statistically significant correlation between the score of each requirement for digital empowerment, with values ranging from (0.835, 0.808), all of which are significant at the 0.01 level and indicate a strong correlation, suggesting that the questionnaire exhibits a good degree of internal consistency.

-The Importance of Digital Empowerment Requirements for Rural Women

The results in Table (2) show that there is a statistically significant correlation between the importance score of each digital empowerment requirement, with values ranging from (0.849, 0.753), all of which are significant at the 0.01 level and indicate a strong correlation, suggesting that the questionnaire exhibits a good degree of internal consistency.

Table (2): Pearson correlation coefficients between the score for each item and the total questionnaire score.

Requirements	Pearson's correlation coefficient	
	Knowledge	Importance
Educational and Training	**0.833	**0.849
Social	**0.808	**0.753

Environmental	**0.835	**0.791
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**** Significant at the 0.01 level.**

(2) Instrument Reliability: Instrument reliability was calculated using two methods:

- Internal consistency method: Cronbach's Alpha was calculated using the Statistical Package for the Social Sciences (SPSS/PC) (Mehrms, Lehmann, 1984, p. 277; Okasha & Al-Banna, 1999).

- Awareness of the requirements for the digital empowerment of rural women: Cronbach's Alpha coefficient was 0.904.

- Importance of the requirements for the digital empowerment of rural women: Cronbach's Alpha coefficient was 0.980.

Sample Characteristics

The data in Table (3) show that 44.7% of the respondents fall within the middle age group (25–30 years), that 61.9% have completed 9–15 years of education, and that 57.5% live in extended families,

62.1% of them are unemployed, 43% have families consisting of 6–7 members, 53.7% own an average number of internet-connected digital devices, and 49% use digital devices for 4–6 hours daily. The monthly income of 43.1% of the respondents ranges from 5,700 to 7,300 pounds, and the percentage of those at the middle-income level reached 47.4%. Approximately one-third of the respondents (35.4%) do not own agricultural land, while 32.7% own 50 qirats or less of agricultural land. Nearly half of the respondents (49.9%) have low membership in community organizations, and 45.8% fall into the average category for opinion leadership, and more than half (54%) have an average level of cognitive engagement, and finally, more than one-fifth (44.1%) have an average level of informal social participation.

Table (3): Distribution of research subjects according to the characteristics studied:

Independent variables	Number	(%)	Arithmetic mean	Standard deviation	Independent variables	Number	(%)	Arithmetic mean	Standard deviation
- Age					- Innovation				
Low (20–24 years)	94	25,6	28,27	4,870	Low (8–13) degrees	99	27	16,37	4,400
Medium (25–31 years)	164	44,7			Moderate (14–18) degrees	174	47,4		
High (32 years and older)	109	29,7			High (19 or more) degrees	94	25,6		
Total	367	100			Total	367	100		
-The Researcher's Education					-Monthly household income				
Low (under 9 years)	10	2,7	98,11	3,241	Low (less than 5,700) pounds	151	41,1	32,5935	238,986
Medium (9–15 years)	227	61,9			Medium (5,700–7,300) pounds	158	43,1		
High (16 years and older)	130	35,4			High (7,400 or more) pounds	58	15,8		
Total	367	100			Total	367	100		
-Family type					- Size of agricultural holdings				
Simple	156	42,5	-	-	None	130	35,4	06,35	063,36
Extended	211	57,5			Low (50 carats or less)	120	32,7		
Total	367	100			Medium (51–85 carats)	91	24,8		
					High (86 carats or more)	26	7,1		
-Current stance on the study					Total	367	100		
Still in school	151	41,1	-	-	-Membership in organizations				
Graduated	216	58,9			Low (6–11) points	183	49,9	12.01	4.539
Total	367	100			Medium (12–18) points	174	47,4		

-The researcher's work					High (19-24) points	10	2,7		
Works	139	37,9	-	-	Total	367	100		
Does not work	228	62,1							
Total	367	100							
-Family size					-Leadership				
					Low (8-16) degrees	104	28,3	20.81	4.816
Small (3-5 people)	95	25,9			(23-17) Medium degrees	168	45,8		
Medium (6-7 people)	158	43			degrees (32-24) High	95	25,9		
Large (8 or more people)	114	31,1			Total	367	100		
Total	367	100							
-Ownership of digital devices					-Cognitive interaction				
Low (1-2) devices	140	38,1	3.04	1.402	Low (8-16) degrees	125	34	19.10	3.789
Medium (3-4) devices	197	53,7			Medium (17-23) degrees	198	54		
High (5 or more) devices	57	15,5			High (24-32) degrees	44	12		
Total	367	100			Total	367	100		
- Number of hours spent using digital technology at a time					- Informal social participation				
(Less than 4) hours	110	30			Low (8-16) degrees	69	18,8	22.16	5.046
(4-6) hours	180	49			Moderate (17-23) degrees	162	44,1		
(7 or more) hours	77	21			High (24 or more) degrees	136	37,1		
Total	367	100			Total	367	100		

3. RESULTS AND DISCUSSION

First: The Reality of Digital Empowerment:

1- Level of Digital Technology Use:

The data in Table (4) show that the percentage of female respondents at the beginner level in digital technology use (52.6%), the intermediate level (25.6%), and the advanced level (21.8%) of the total female respondents.

Table 4: Distribution of female respondents by level of digital technology use:

Level of digital technology use	Number	%
Beginner	94	25,6
Good	193	52,6
Professional	80	21,8
Total	367	100

2. Level of reliance on digital technology:

The data in Table (5) show that 33.5% of the respondents fell into the moderate category of reliance on digital technology, 25.6% into the high

category, and 22.6% into the low category. while only 18.3% of the total respondents did not rely on digital technology devices.

Table (5): Distribution of Research Participants by Level of Reliance on Digital Technology.

Level of reliance on digital technology	Number	%
High	94	25,6
Average	123	33,5
Low	83	22,6
Not applicable	67	18,3

Total	367	100
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3. Most Frequently Used Digital Technology Websites and Apps:

The data in Table (6) indicates the variation in the digital technology sites and applications used by the respondents, and that "TikTok" came first among

those digital technology sites and applications with an arithmetic mean of (3.20) degrees, while "Technology and Government Services" came last with an arithmetic mean of (1.69) degrees.

Table (6): Distribution of respondents according to the most frequently used digital technology sites and applications.

M	Websites	always		sometimes		rarely		no		Arithmetic average
		number	%	number	%	number	%	number	%	
1	TikTok app	210	57,2	64	17,4	48	13,1	45	12,3	3,20
2	Facebook app	173	47,1	84	22,9	70	19,1	40	10,9	3,06
3	WhatsApp app	147	40,1	105	28,6	79	21,5	36	9,8	3,00
4	Instagram app	155	42,2	72	19,6	65	18	75	20,2	2,84
5	Google Chrome website	148	40,3	75	20,4	59	16,1	85	23,2	2,78
6	YouTube app	110	30	94	25,6	73	19,9	90	24,5	2,62
7	X app	118	32,2	50	13,6	94	25,6	105	28,6	2,50
8	News websites	50	13,6	80	21,8	49	13,4	188	51,2	1,98
9	Telegram app	45	12,3	60	16,3	50	13,6	212	57,8	1,83
10	Technology and government services websites	37	10,1	40	10,9	64	17,4	226	61,6	1,69

-Preferred topics when using digital technology:

The data in Table (7) indicate a variation in the preferred research topics when using digital technology. "Social issues" ranked first among these topics at 86.1%, while "technology and government services" ranked last at 34.3%.

The high prevalence of social topics can be explained by the fact that young people are an integral part of the society in which they live; they influence and are influenced by the social issues they

encounter on these websites and apps, or they seek to convey them to their audience in the hope of finding solutions or to show online solidarity. As for the high level of engagement with news and events, this is due to the coverage of as many news stories as possible in real time; the media no longer holds the authority for breaking news and exclusivity, given the presence of journalists who report news with audio and video updates as they happen.

Table 7: Distribution of female respondents by preferred topics when using digital technology:

Topics	Yes		No		Order
	Repetition	%	Repetition	%	
- Social issues	312	85	55	15	1
-Technology and government services creators	122	33,2	245	66,8	8
- News (regional and international events) and public affairs	291	79,3	76	20,7	2
- Economy and finance	231	62,9	136	37,1	5
- Education (information and scientific research)	215	58,6	152	41,4	6
-Dialogical and Religious	249	67,8	118	32,2	4
-Entertainment, art, and content creators	263	71,7	104	28,3	3
- Sports	170	46,3	197	53,6	7

Motivations for using digital technology:

The data in Table(8) indicate that the primary motivation for using digital technology among the female respondents was "Staying in touch with friends and family, and strengthening existing

relationships"(55.9%) This may be attributed to the fact that more than one-third of the female respondents (37.1%) are in the middle age group (25–30 years), and this age group is the heaviest user of digital technology, while the least common

motivation was "Obtaining information that helps in completing job tasks and professional development," at 12.3%.

Table 8: Distribution of Respondents by Motives for Using Digital Technology.

Motives	Yes		NO	
	Repetition	%	Repetition	%
-Staying in touch with friends and family, and strengthening existing relationships	205	55,9	162	44,1
-Curiosity and interest in a particular topic or learning about something new	185	50,4	182	49,6
- Expressing opinions and feelings, and sharing experiences with others	175	47,7	192	52,3
-Desire for recognition and education (awareness of social and cultural issues, and exploring interests)	147	40,1	220	59,9
-Acquiring information in various fields and exchanging experiences and knowledge	139	37,9	228	62,1
-Recreation and leisure activities (filling free time)	121	33	246	67
-Socializing and building relationships and friendships with new communities and cultures	114	31,1	253	68,9
-Following news, updates, and current events	105	28,6	262	71,4
-Following religious and dialogue programs	80	21,8	287	78,2
-Communicating with other students, sharing and discussing course materials	58	15,8	309	84,2
-Obtaining information that helps in completing job tasks and professional development	45	12,3	322	87,7

Second: The respondents' knowledge of the requirements for the digital empowerment of rural women, and the importance of these requirements:

The respondents' answers regarding their knowledge of educational and training requirements, social requirements, and environmental requirements—as well as the importance of each—were ranked in descending order based on the weighted average of both knowledge and importance. The respondents were also classified according to their level of knowledge of these requirements and the importance of these requirements, and the results showed the following:

1-The participants' knowledge of the (educational and training) requirements for their digital empowerment, and the importance of these requirements:

At the top of the educational and training

requirements that participants must know was: The need to educate women so they can interact with the developments of the digital age, with a weighted average of 1.71 points. In last place was knowledge of the requirements for raising women's awareness of the importance of their family's participation in the use of technological devices and protecting them from their risks, with a weighted average of 1.40 points (Table 9).

The results also indicate that the importance of educational and training requirements for the digital empowerment of female respondents was highest in the following areas: Encouraging and motivating women to use digital technology when performing family and community activities and tasks, with a weighted average of 3.07 points. In last place was the importance of media coverage highlighting the significance of technology and digitization in society and their impact on the family, with a weighted average of 1.81 points (Table 9).

Table (9): Weighted average of respondents' awareness of the educational and training requirements for their digital empowerment and the importance of these requirements:

their digital empowerment and the importance of these requirements.					
				Order	
Educational and Training Requirements	Average Weighted average of Knowledge	Order	Average Weighted by importance		
A. Education and Training Methods:					
-Provide digital training programs for women tailored to their needs.	1,57	6	1,87	15	

-Continue government support for digital education by providing curricula and programs that support it.	1,60	4	2,65	7	
-Conduct training sessions on digital transformation skills and how to apply them in performing tasks.	1,59	5	2,63	8	
B. Implementation Approach:					
-Encourage women to use their digital skills to guide their families, involve them in education and learning, and monitor their use of digital technologies	1,48	13	2,62	9	
- Use women's digital skills to protect families from online risks and teach them digital etiquette	1,66	3	2,38	12	
-Help women establish a dialogue and channel of communication with their families regarding the digital society, including its pros and cons	1,53	9	2,57	11	
-Encourage women to share their interests and posts with their families through the use of digital devices	1,55	8	2,61	10	
-Encourage women to strengthen their religious conscience and moral compass when using technological tools	1,44	15	2,67	6	
C. Awareness and Education Approach:					
-Raising cultural awareness of the necessary information and knowledge regarding digital practices, their applications, and their importance	1,49	12	1,87	14	
-Educating women on the importance of their families' participation in the use of technological devices and protecting them from the risks associated with such devices	1,40	16	1,88	13	
- Highlighting in the media the importance of technology and digitalization in society and their impact on the family	1,47	14	1,81	16	
- Highlighting in the media how digitalization can be leveraged to achieve digital security and safety	1,56	7	2,74	3	
- Focusing religious discourse on the pursuit of useful knowledge and the belief that digital empowerment is a key component of women's effectiveness in their family and community roles	1,52	10	2,71	5	
- The necessity of educating women to enable them to engage with the developments of the digital age.	1,71	1	2,73	4	
- Instilling positive values toward digitalization in all tasks assigned to women	1,50	11	2,81	2	
- Encouraging and motivating women to use digital technology when carrying out family and community activities and tasks	1,69	2	3,07	1	

When the participants were classified into three categories based on their level of knowledge regarding the educational and training requirements for their digital empowerment, the results in Table (10) show that nearly half of the respondents (49.0%) fall into the moderate knowledge level category, the smallest proportion (11.2%) fall into the low knowledge level category, and more than one-third of the respondents (39.8%) fall into the high knowledge level category.

Table (10): Distribution of female respondents according to their level of knowledge regarding the educational and training requirements for their digital empowerment and the importance of these requirements:

Level of Knowledge and Importance	Low	Average	High	Total
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When classifying the respondents according to the degree of importance of educational and training requirements for their digital empowerment into three categories, the results in Table (10) show that one-third of the respondents (32.7%) fall into the low-level category, and more than one-third of the respondents (33.37%) fall into the medium-level category, while the percentage of female researchers in the high-level category reached 30%.

	Number	%	Number	%	Number	%	Number	%
Knowledge of Educational and Training Requirements	41	2,11	180	49	146	8,39	367	100
Importance of Educational and Training Requirements	120	7,32	137	3,37	110	30	367	100

2. The research participants' awareness of the (social) requirements for their digital empowerment, and the importance of these requirements:

Among the top social requirements that research participants should be aware of are: Encouraging rural women to actively participate in the development of their villages and the building of their communities, with a weighted average of 1.75 points, while knowledge of the requirements for family support to encourage rural women to acquire digital skills and build a digital society ranked last,

with a weighted average of 1.27 points (Table 11).

The results also indicate that the importance of social requirements for the digital empowerment of female respondents was highest for: building women's self-confidence and their ability to acquire digital skills, with a weighted average of 3.07 points, while ranking last was: media coverage highlighting the importance of technology and digitalization in society and their impact on the family, with a weighted average of 1.46 points (Table 11).

Table (11): Weighted average of female respondents' awareness of the social requirements for their digital empowerment and the importance of these requirements:

Social Requirements	Weighted Average of Knowledge	Order	Weighted Average of Importance	Order
-Encouraging rural women to learn and develop skills and capabilities and gain new experiences in digitalization.	1,59	8	1,83	23
-Providing and training talented (qualified) female trainers and experts in digitalization to equip and train women to navigate the digital environment.	1,74	2	2,77	9
-Supporting women's organizations to develop their capabilities in the field of digitalization.	1,73	3	2,79	8
-Encouraging motivational initiatives to strengthen women's capabilities in digital empowerment.	1,52	13	2,76	10
-Highlighting the experiences of pioneering women in digital technology to serve as a source of inspiration.	1,60	7	2,51	17
-Raising awareness and providing media outreach to explain how to use digital services.	1,51	14	2,69	13
-Involving rural women in the planning of their development programs.	1,64	5	2,71	12
-Implementing intensive training courses for girls who have dropped out of school.	1,46	18	2,75	11
-Launching initiatives to train everyone on the use of the internet and digital platforms.	1,53	12	1,84	22
-Changing traditional perceptions and fostering societal acceptance and encouragement of women as agents of digital development	1,50	15	1,85	21
-Guiding women toward capacity building, participation in decision-making, and technical communication that impacts their lives and community priorities	1,54	11	1,79	24
-Enabling women to access appropriate digital technology	1,70	4	2,88	4
-Encouraging rural women to actively participate in the development of their villages and the building of their communities	1,75	1	2,84	6
-Encouraging and motivating women to embrace the experience of developing their digital skills	1,47	17	2,82	7
-Raising women's awareness of their duties and rights in society and how they influence their own lives and those of their families	1,38	22	2,86	5
-Assisting women in digital parenting and ensuring digital safety for their children	1,62	6	1,83	3

-Family support to encourage rural women to acquire digital skills and build a digital society	1,27	26	2,77	2
-Building women's self-confidence and their ability to acquire digital skills	1,43	21	2,79	1
-Supporting the equal participation of men and women in digitalization	1,49	16	2,76	19
-Increase public awareness through the media to promote and market the culture of digitalization and its importance.	1,44	20	2,51	14
-Harness digital applications and technology to serve women, particularly those in rural areas.	1,58	9	2,69	16
-Focus on governance and conduct intensive training courses for girls who have dropped out of school.	1,37	23	2,71	20
-Engage with social issues through digital channels.	1,45	19	2,75	15
-Provide social services to enable women to continue working after starting a family (childcare centers).	1,35	24	1,84	25
-Empower disadvantaged segments of society to access technology and knowledge.	1,56	10	1,85	18
-Highlighting women's achievements and contributions in the digital world	1,34	25	1,79	26

When the female respondents were classified into three categories based on their level of knowledge regarding the social requirements for their digital empowerment, the results in Table (12) show that more than half of the respondents (8.57%) fall into the moderate knowledge level category, the smallest proportion (18.5%) fall into the low knowledge level category, and nearly a quarter of the respondents (23.7%) fall into the high knowledge level category.

When classifying the respondents according to the degree of importance of social requirements for their digital empowerment into three categories, the results in Table (12) show that about one-third of the respondents (33.8%) fall into the low-level category, more than one-third of the respondents (5.36%) fall into the medium-level category, while the percentage of female respondents in the high-level category was 7.29%.

Table (12): Distribution of female respondents according to their level of knowledge regarding the social requirements for their digital empowerment and the importance of these requirements:

Level of Knowledge and Importance	Low		Average		High		Total	
	Number	%	Number	%	Number	%	Number	%
Understanding Social Requirements	68	5,18	212	8,57	87	7,23	367	100
The Importance of Social Requirements	124	8,33	134	5,36	109	7,29	367	100

3. participants' knowledge of the (environmental) requirements for their digital empowerment, and the importance of these requirements:

Among the environmental requirements that research participants must be aware of, the top priority was ensuring the provision of support and funding for women-led digital technology projects, with a weighted average of 1.64 points, while ranking last was: Knowledge of the requirements for developing Egypt's cybersecurity and digital security strategy and its implementation, with a weighted average of 1.21 points (Table 13).

The results also indicate that the most important environmental requirement for the digital empowerment of female researchers was: updating the activities of the Information Technology Portal to keep pace with the requirements and needs for the training and qualification of women, with a weighted average of 3.17 points, while the last-ranked requirement was: updating the activities of the information technology portal to meet the requirements and needs of women's training and qualification, with a weighted average of 1.42 points (Table 13).

Table (13): Weighted average of female respondents' awareness of the environmental requirements for their digital empowerment and the importance of these requirements:

Environmental Requirements	Weighted Average of Knowledge	Order	Weighted Average of Importance	Order
- Enacting legislation that supports the creation of an enabling environment to promote the use of digital tools and applications.	1,50	7	3,09	4

- Establishing regulatory bodies to support digitalization.	1,63	2	3,10	3
- Enacting laws to regulate the digital skills sector.	1,41	16	1,99	16
- Activating communication channels between institutions concerned with rural women in the field of digitalization.	1,44	13	2,51	8
- Expanding internet services and networks throughout the country and improving service quality.	1,56	4	2,50	9
- Establishing new mobile service coverage stations to provide access and meet the growing demand for telecommunications services.	1,46	11	2,03	13
- Modernizing and developing Egypt's IT infrastructure and digital content	1,55	5	2,56	7
- Formulating and implementing policies and initiatives for state sectors to achieve digital development.	1,47	10	1,52	18
-Promoting the use of information technology across all state sectors.	1,49	8	2,07	11
-Developing plans and policies aimed at advancing activities to digitally empower women	1,42	15	1,50	20
-Strengthening and expanding cooperation programs and knowledge exchange with leading Arab, regional, and international organizations in digitalization	1,52	6	2,11	10
-Improving digital and information infrastructure	1,26	20	1,51	19
-Providing integrated databases for all sectors of the state	1,22	21	2,04	12
-Developing Egypt's cybersecurity and digital security strategy and implementing it	1,21	22	1,42	22
-Deepening and localizing the domestic information technology industry	1,30	19	2,80	6
-Increasing internet usage rates and promoting digital literacy among different segments of society	1,40	17	3,06	5
-Updating the activities of the Information Technology Portal to meet the requirements and needs for the training and empowerment of women	1,45	12	3,17	1
- Ensure support and funding for women-led digital technology projects	1,64	1	3,15	2
- Reduce disparities between rural and urban areas in internet access and digital literacy training	1,34	18	2,00	15
- Establish a digital network for women and digital centers at universities	1,48	9	2,02	14
-Develop partnerships with various leading sectors to create incentive mechanisms within the digitalization approach	1,59	3	1,49	21
-Develop incentive mechanisms as a fundamental principle of the digitalization approach and encourage initiatives to enhance women's digital empowerment capabilities	1,43	14	1,54	17

When the female respondents were classified into three categories based on their level of knowledge regarding the environmental requirements for their digital empowerment, the results in Table 14 show that 6.43% of the respondents fall into the "moderate" knowledge level category, while the smallest proportion (21%) falls into the "high" level category, and more than one-third of the respondents (35.4%) fall into the low knowledge level category.

When classifying the respondents according to the importance of environmental requirements for their digital empowerment into three categories, the results in Table 14 show that 46% of the respondents fall into the low-level category, one-third of the respondents (33%) fall into the medium-level category, while 21% of the female researchers fell into the high level category.

Table (14): Distribution of female respondents according to their level of knowledge regarding the environmental requirements for their digital empowerment and the importance of these requirements:

Level of Knowledge and Importance	Low		Average		High		Total	
	Number	%	Number	%	Number	%	Number	%

Understanding Environmental Requirements	130	4,35	160	6,43	77	21	367	100
The Importance of Environmental Requirements	169	46	121	33	77	21	367	100

4. The overall awareness of the requirements (educational, training, social, and environmental) for their digital empowerment, and the importance of these requirements:

When classifying the respondents into three categories based on their level of awareness of the overall requirements for digital empowerment, The results in Table (15) show that nearly half of the respondents (6.49%) fall into the moderate knowledge level category, the smallest percentage (2.23%) fall into the low knowledge level category,

and more than a quarter of the respondents (27.2%) fall into the high knowledge level category.

When classifying the respondents according to the degree of importance of digital empowerment requirements into three categories, the results in Table (15) show that approximately one-third of the respondents (2.32%) fall into the low-level category, 1.44% fall into the medium-level category, while the percentage of female researchers in the high level category was 7.23%.

Table (15): Distribution of female respondents according to their overall level of awareness of the educational, training, social, and environmental requirements necessary for their digital empowerment, and the importance of these requirements:

Level of Knowledge and Importance	Low		Average		High		Total	
	Number	%	Number	%	Number	%	Number	%
Understanding Educational, Training, Social, and Environmental Requirements	85	2,23	182	6,49	100	2,27	367	100
The Importance of Educational, Training, Social, and Environmental Requirements	118	2,32	162	1,44	87	7,23	367	100

It is clear from the above that (72.8%, 76.3%) of the respondents demonstrated a low to moderate level of knowledge regarding the requirements of digital empowerment in general and its importance for their own digital empowerment. This can be explained in light of the personal and technical characteristics of the respondents, as (46.1%) of them have families of six or more members, (62.1%) of them are unemployed, and they also scored at a low to moderate level in terms of monthly household income, organizational membership, leadership, and cognitive interaction, with percentages of (84.2%, 91.8%, 68.1%, 97.3%, 74.1%, and 88%), which may

negatively impact their awareness of these requirements and their importance. Furthermore, employment provides women with the opportunity to interact with others, learn about their cultures, and expand their knowledge. Furthermore, monthly income is a pivotal factor influencing various aspects of human behavior; women's limited financial capacity may hinder them from meeting the family's basic needs or purchasing devices or tools related to digital technology or accessing such knowledge. This may also be due to the fact that some of these requirements are difficult to meet in practice or are not suited to the circumstances of rural women.

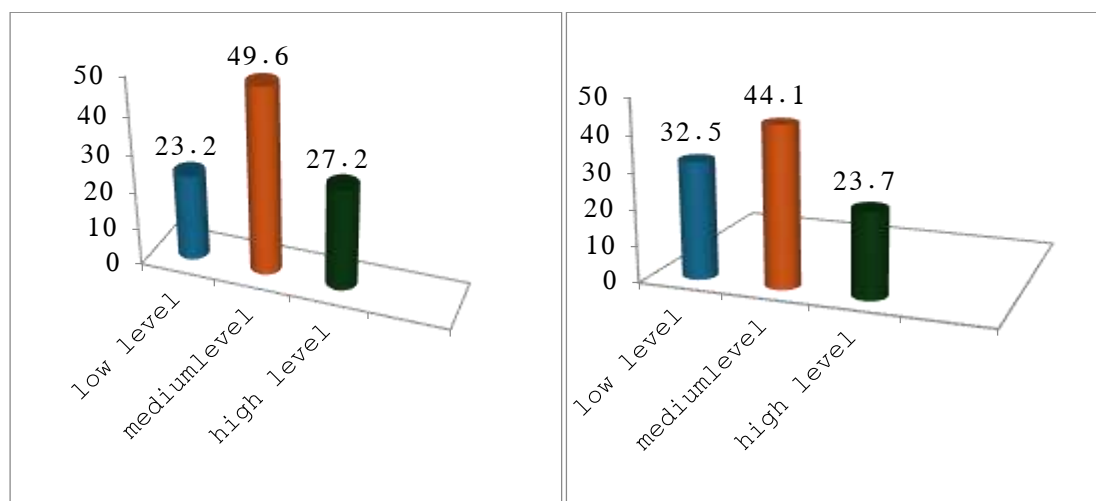


Figure 1: Level of research topics according to the overall level of knowledge regarding digital empowerment requirements and the importance of these requirements.

Third: The relationship between the independent variables under study and the respondents' knowledge of digital empowerment requirements, as well as the importance of these requirements, as dependent variables.

A. Results of simple correlation coefficients (Pearson)

1- The correlation between the respondents' level of knowledge of digital empowerment requirements (as a dependent variable) and each of the independent variables:

The research results showed a positive correlation at a significance level of 0.01 between the respondents' level of knowledge of digital empowerment requirements (as a dependent variable) and each of the following independent variables: the respondent's education, monthly household income, innovativeness, organizational membership, leadership, and cognitive interaction, with calculated simple correlation coefficients of 0.266, 0.145, 0.209, 0.321, 0.247, and 0.245, respectively. Meanwhile, the correlation was negative at a significance level of 0.01 with the age variable, where the correlation coefficient was -0.323. However, no significant correlation was found with the following independent variables: household size, ownership of digital devices, size of agricultural holdings, and informal social participation, (Table 16).

Based on these results, the first statistical hypothesis is partially rejected for each of the following variables: age, the respondent's education, monthly household income, innovation,

organizational membership, leadership, cognitive interaction, and the possibility of accepting the alternative research hypothesis for these variables.

2. The correlation between the perceived importance of digital enablement requirements (dependent variable) and each of the independent variables:

With computed simple correlation coefficients of 0.316, 0.244, 0.288, 0.248, and 0.246, respectively, the research findings showed a positive correlation at the 0.01 significance level between the respondent's education, innovativeness, organizational membership, leadership, and cognitive interaction and the perceived importance of digital enablement requirements (dependent variable). Meanwhile, a positive and statistically significant relationship was found at the 0.05 probability level with the monthly household income variable, where the correlation coefficient was 0.124. A positive correlation was also evident at the 0.05 significance level between monthly household income and: family size, ownership of digital devices, size of agricultural holdings, and informal social participation, and the respondents' views on the educational, training, social, and environmental requirements overall for their digital empowerment (Table 16).

Based on these results, the first statistical hypothesis is partially rejected for each of the following variables: age, the respondent's education, monthly household income, innovation, organizational membership, leadership, and cognitive interaction; the alternative research hypothesis is accepted for these variables.

Table (16): Pearson's correlation coefficients for the relationship between the independent variables under study and the respondents' knowledge of digital empowerment requirements and the importance of these

requirements:

Independent Variables	Total knowledge	Overall importance
Age	323,**0	312,**0
Education Level	266,**0	316,**0
Household Size	002,0	043,0
Monthly Household Income	145,**0	124,*0
Ownership of Digital Devices	092,0	090,0
Size of Agricultural Holdings	050,0	022,0
Innovation	209,**0	244,**0
Membership in Organizations	321,**0	288,**0
Leadership	247,**0	248,**0
Knowledge Interaction	245,**0	246,**0
Informal Social Participation	090,0	032,0

* Significant at the 0.05 level ** Significant at the 0.10 level.

B. "The significance of variations in the mean scores for knowledge of the educational, training, social, and environmental requirements for the overall digital empowerment of the female as well as the classifying them based on both their current employment and educational status, were evaluated using the "t" test. The results are shown in (Table 17):

1- Knowledge of Digital Empowerment Requirements:

-Current Status Regarding Education:

"According to the study's findings, respondents' mean scores for their understanding of the requirements for digital empowerment were 97.56 for those who were still in school and 96.31 for those who had finished their education. The calculated t-value was 0.898, which is not statistically significant at any probability level, indicating that there are no significant differences in the mean scores of the respondents' knowledge of digital empowerment requirements based on their current educational status (Table 17).

-RESEARCH FINDINGS

"According to the study's findings, the average scores for participants' understanding of the requirements for digital empowerment were 95.64 for those who were employed and 94.64 for those who were unemployed. The calculated t-value was 2.220, which is statistically significant at the 0.05 level, indicating the presence of statistically significant differences in the mean scores of the respondents' knowledge of digital empowerment requirements according to their employment status (Table 17).

-Family Type:

The research results show that the mean scores for the subjects' knowledge of digital empowerment requirements were 99.03 and 95.19) points, respectively. The calculated t-value was 2.782, which is statistically significant at the 0.01 level, indicating

the presence of statistically significant differences in the mean scores of the respondents' knowledge of digital empowerment requirements according to their family type (Table 17).

Based on these results, the first statistical hypothesis is partially rejected for each of the following two variables: the respondent's employment status and family type, and the alternative research hypothesis is accepted for these variables.

2. The Importance of Digital Enablement Requirements:

-Current Status of Education:

The research findings indicate that the average importance scores for digital enablement requirements were 157.96, 154.82), respectively. The calculated t-value was 0.686, which is not statistically significant at the 0.05 level, indicating no significant differences in the mean importance scores for digital empowerment requirements based on the respondents' current status regarding their studies (Table 17).

- Employment Status of the Respondents:

The research results show that the mean scores for the importance of digital empowerment requirements for employed and unemployed female respondents were (192.41, 152.32) ranking points, respectively. The calculated t-value was 2.191, which is statistically significant at the 0.05 level, indicating the presence of statistically significant differences in the mean importance scores of digital empowerment requirements according to both the respondents' employment status and their family status (Table 17).

-Family Type:

The research findings indicate that the average importance scores for digital empowerment requirements were 161.36, 152.24), respectively. The calculated t-value was 2.018, which is statistically significant at the 0.05 level, indicating the existence of statistically significant differences in the mean

importance scores of digital empowerment requirements among female respondents according to their family type (Table 17).

Based on these results, the first statistical

hypothesis is partially rejected for both of the following variables: the respondent's employment status and family type, and the alternative research hypothesis is accepted for these variables.

Table (17): Results of the t-test to assess the significance of differences in the mean scores for knowledge of digital empowerment requirements and the importance of these requirements, categorized by: (current educational status, the respondent's occupation, and family type):

Independent variables	(Groups)	Knowledge			Importance		
		Arithmetic mean	Standard deviation	Value T	Arithmetic mean	Standard deviation	Value T
Current Status of the Study	Still in school	97,56	13,296	0,898	157,96	45,210	0,686
	Finished school	96,31	13,138		154,82	41,411	
Researcher's Work	Working	95,64	12,511	*2,220	162,41	47,820	*2,191
	Not working	94,64	11,728		152,32	39,409	
Family Type	Simple	99,03	14,530	**2,782	161,36	48,725	*2,018
	Extended	95,19	11,897		152,24	37,841	

* Significant at the 0.05 level ** Significant at the 0.10 level.

Based on the following variables (number of hours of digital technology use per session, level of digital technology use, and degree of reliance on digital technology)

"the F-test was used to determine the significance of differences between the means of scores regarding knowledge of digital empowerment requirements and the importance of these requirements The results are shown in Table (18):

1- Knowledge of digital empowerment requirements:

- Number of hours of digital technology use per session: The research findings indicate that the average scores for the respondents' knowledge of digital empowerment requirements were 95.47 for those using digital technology for less than 4 hours, 97.23 for those using it for 4–6 hours, and 97.96 for those using it for more than 6 hours, respectively. The calculated t-value was 0.942, which is not statistically significant at the 0.05 probability level, indicating that there are no significant differences in the mean scores of the respondents' knowledge of digital empowerment requirements according to the number of hours of digital technology use per session.

-Level of Digital Technology Use: The research findings indicated that the average scores for the participants' knowledge of digital literacy requirements reached 95.76 for beginners, 96.29 for intermediate users, and 100.03 for advanced users. The calculated t-value was 3.096, which is statistically significant at the 0.05 level, indicating the existence of statistically significant differences in the mean

scores of the female respondents' knowledge of digital empowerment requirements according to their level of digital technology use.

-Level of reliance on digital technology: The research results showed that the mean scores for the participants' knowledge of digital empowerment requirements were as follows: for those who rely on digital technology, the scores were high (100.05), moderate (97.11), and low (95.87), and for those who do not rely on it (94.68). The calculated t-value was 3.139, which is statistically significant at the 0.05 level, indicating the existence of statistically significant differences in the mean scores of the respondents' knowledge of digital empowerment requirements based on their level of reliance on digital technology.

- Based on these results, the first statistical hypothesis is partially rejected for each of the following variables: level of digital technology use, degree of reliance on digital technology, and the acceptability of the alternative research hypothesis for these variables.

2. Importance of Digital Empowerment Requirements:

-Number of hours of digital technology use per session: The research results showed that the average importance scores for digital enablement requirements were 151.92 points for respondents who use digital technology for less than 4 hours, 157.35 points for those who use it for 4–6 hours, and more than 6 hours (159.68) points. The calculated t-value was 0.861, which is not statistically significant at the 0.5 level, indicating no significant differences

in the mean importance scores of digital empowerment requirements based on the number of hours of digital technology use per session.

-Level of digital technology use: The research results showed that the mean importance scores for digital empowerment requirements, as perceived by the respondents, were 152.79 for those at the beginner level of use, 153.61 for those at the good level of use, and expert level (167.08). The calculated t-value was 3.381, which is statistically significant at the 0.05 level, indicating the existence of statistically significant differences in the mean importance scores of digital empowerment requirements according to the level of digital technology use.

Level of Reliance on Digital Technology: The research findings showed that the average

importance scores for digital enablement requirements were 167.85 for respondents who relied heavily on digital technology, 155.96 for those who relied moderately, and 151.73 for those who relied minimally, and those with no reliance (149.63). The calculated t-value was 3.575, which is statistically significant at the 0.05 level, indicating the existence of statistically significant differences in the mean importance scores of digital enablement requirements according to the degree of reliance on digital technology.

Based on these findings, the alternative research hypothesis is accepted for both the degree of reliance on digital technology and the degree of use of digital technology, while the first statistical hypothesis is partially rejected.

Table (18): Results of the F-test for the significance of differences between the means of scores for digital literacy requirements and the importance of these requirements, according to the following variables: (number of hours of digital technology use per session, level of digital technology use, and degree of reliance on digital technology):

Independent variables	(Groups)	Knowledge			Importance		
		Arithmetic mean	Standard deviation	Value T	Arithmetic mean	Standard deviation	Value T
Number of hours spent using digital technology at a time	Less than 4 hours	95,47	11,663	0,942	151,92	37,593	0,861
	(4-6) hours	97,23	13,425		157,35	43,601	
Level of digital technology adoption	More than 6 hours	97,96	14,856	*3,096	159,68	49,164	*3,381
	Beginner	95,76	11,808		152,79	40,235	
					153,61	40,627	
Level of reliance on digital technology	Good	96,29	12,145	*3,139	167,08	50,253	*3,575
	Professional	100,03	16,769		167,85	51,014	

* Significant at the 0.05 level ** Significant at the 0.10 level.

The positive correlation between the following variables can be interpreted as follows: the respondent's education, monthly household income, innovation, organizational membership, leadership, and cognitive interaction, and the research participants' knowledge of the requirements and importance of digital empowerment, as follows: education contributes to raising the research participants' level of knowledge and increases their understanding of digital technology and their grasp of the requirements and importance of its use; and female respondents from high-income families are better able to keep up with digital technology, which drives them to seek out information related to it; furthermore, the diversity of their information sources contributes to increasing their knowledge of digital technology. Similarly, those involved in social or development organizations have greater exposure

to awareness-raising activities and programs, Furthermore, female respondents who are willing to adopt modern and new technologies are more interested in seeking information related to them, which is reflected in their heightened awareness and increased knowledge of their rights and the necessary requirements-whether educational, training-related, social, or environmental-for their digital empowerment. This finding aligns with a study by Kara Kirby (2016), which noted that access to secondary education or higher, coupled with the support of strong family relationships, enables women to access digital technology. Suneel Kumar et al. (2024) add that education has emerged as a key factor influencing women's digital skills and levels of empowerment, and emphasize the importance of digital inclusion and education for achieving gender equality and women's advancement.

According to a study by Sadekur Rahman *et al.* (2023), digital technology improves access to knowledge and information, breaks down social and cultural barriers, and promotes digital literacy, all of which aid rural women in advancing their empowerment.

Conversely, the study found a significant negative correlation between age and the respondents' knowledge of the requirements and importance of digital empowerment, indicating that older age groups are less receptive to modern technologies and less cognitively engaged compared to younger age groups.

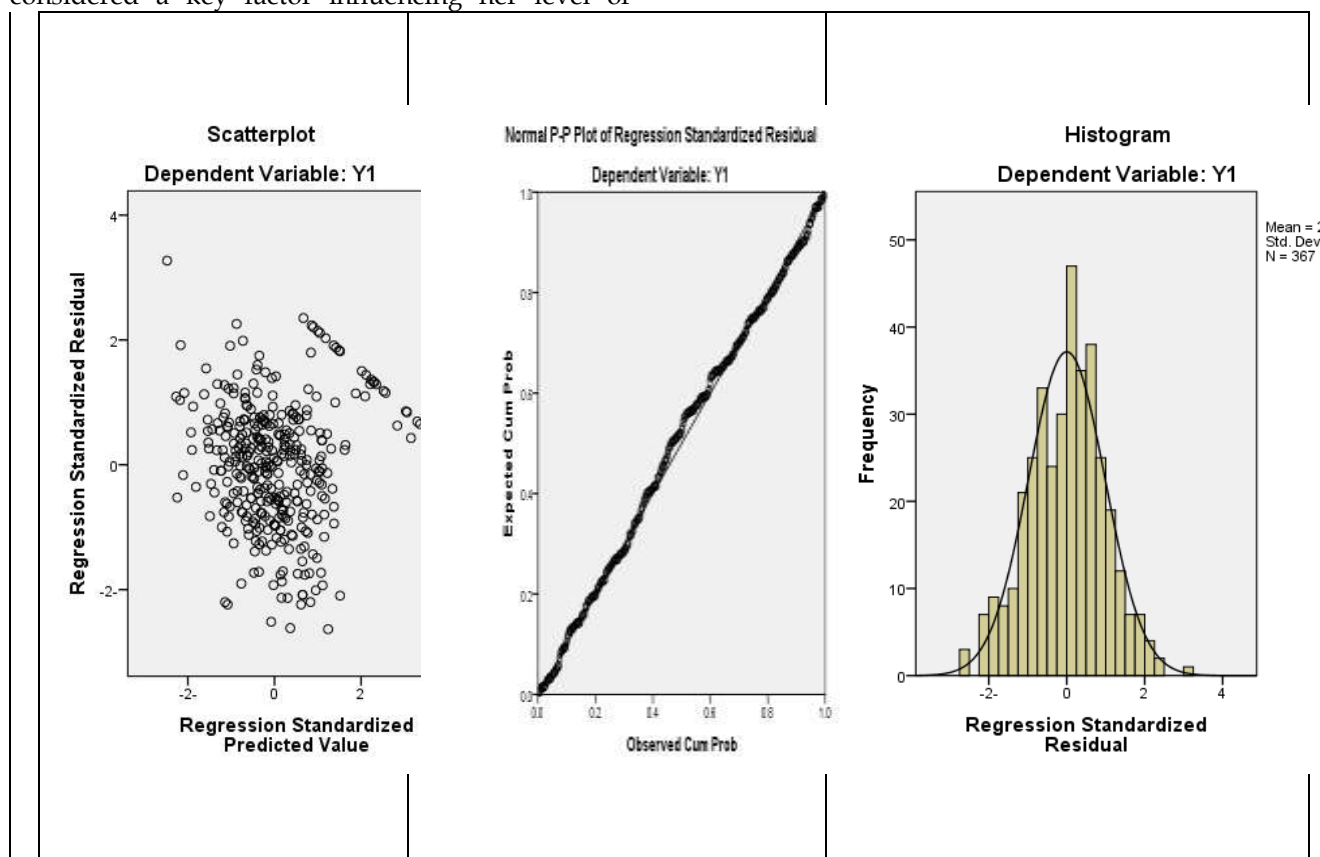
Regarding the relationship between family type and the respondent's employment status, the results favored working female respondents living in nuclear families, as this family structure provides greater opportunities to access various information sources, in addition to the rapid circulation of information among a smaller number of individuals, which contributes to increased interest in understanding the requirements and importance of digital technology. In contrast, extended families may face certain challenges that relatively reduce knowledge related to digital technology. Furthermore, the female respondent's employment is considered a key factor influencing her level of

knowledge, as her work provides her with greater opportunities to access various information sources and learn about development programs related to the use of digital technology. Conversely, the lower average level of knowledge among non-working female respondents may be attributed to their limited exposure to various information sources and experiences, as well as their weak direct connection to activities or institutions that could contribute to disseminating knowledge regarding the requirements and importance of digital technology. Similarly, female respondents who possess a professional level of digital technology use and rely heavily on digital technology fall into the "proficient" category.

Fourth: The relative contribution of the studied independent variables to explain the overall variance among the respondents:

A- The relative contribution of the studied independent variables to explaining the overall variance in the respondents' knowledge of their digital empowerment requirements:

To conduct the regression analysis, the linearity of the study data and the normality of the data distribution were verified. The results were as follows:



<i>Figure (3) represents the spread of the residuals with the expected values, and from it it becomes clear that there is no specific pattern for the residuals, and this is consistent with the linearity condition</i>	<i>Figure (2) shows that the remnants cluster around the line, and this confirms that the data are distributed according to a normal distribution.</i>	<i>Figure (1) shows the histogram to indicate that the data are normally distributed</i>
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Figures (1, 2, 3) clearly demonstrate the random distribution of the residuals and their lack of a specific pattern. This confirms the linearity of the study data and the normality of the sample distribution, all of which are necessary conditions for conducting stepwise multiple regression analysis.

The results of the multiple regression analysis showed that seven independent variables, taken together, significantly influence the respondents' knowledge of digital empowerment requirements at the 0.05 level. The F-value was 20.8 (Table 20), the coefficient of determination (r^2) was 0.289, and the multiple correlation coefficient was 0.537 (Table 19). These seven variables collectively explain approximately 29% of the possible variance in the respondents' knowledge of digital empowerment requirements. These variables are: age, organizational membership, cognitive interaction, the respondent's education, and the monthly income of the leading family (Table 21).

Table (19) Values of R, R Square

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.537	0.289	0.275	11.241

The research hypothesis can be accepted and the third statistical hypothesis can be partially rejected in light of the aforementioned.

"Table (20) Value"

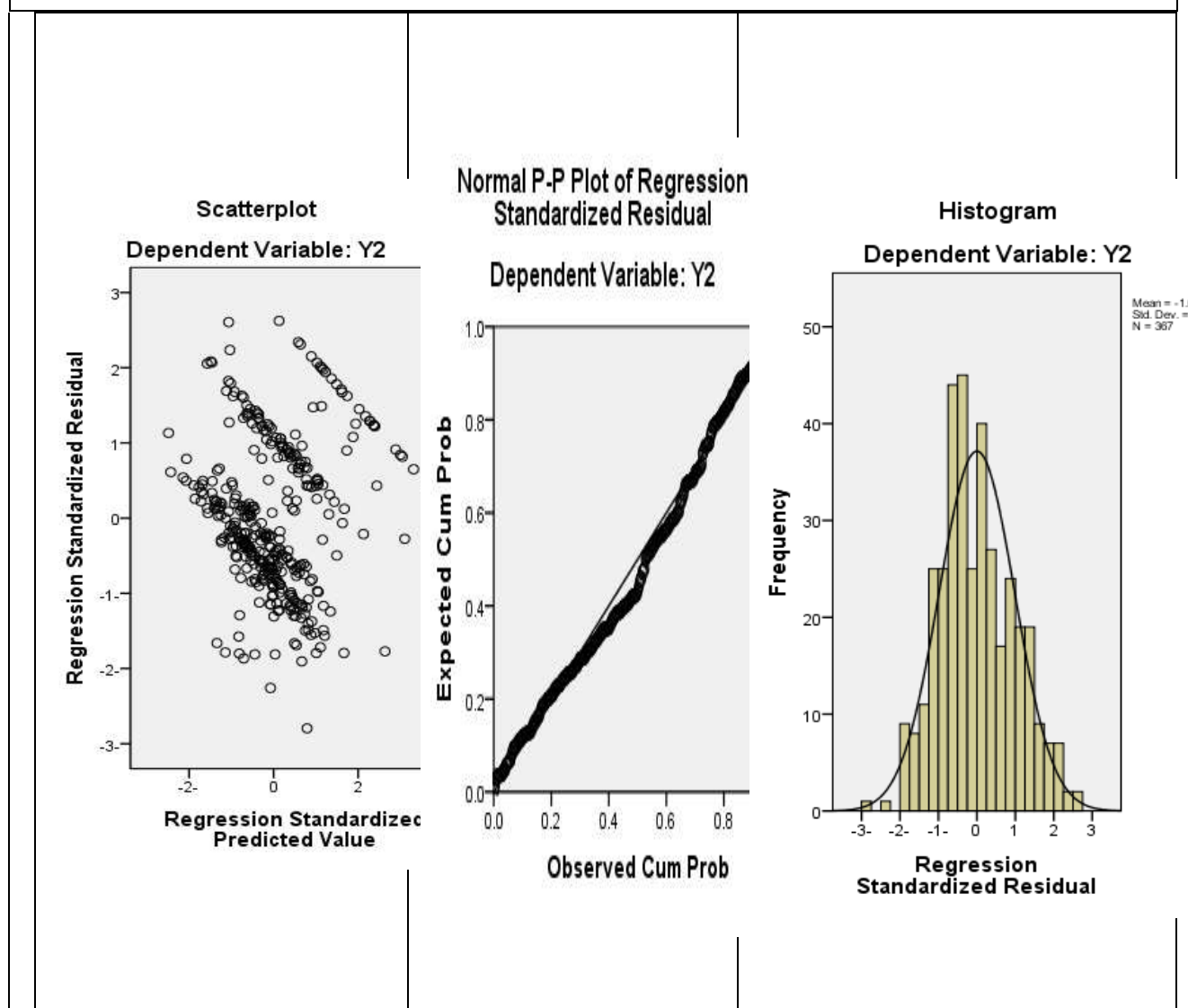
ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	18404.831	11	2629.262	20.806	.000
	Residual	45366.657	3599	126.370		
	Total	63771.488	366			

Table (21) Values of the Standard Partial Regression Coefficient.

B-The relative contribution of the studied independent variables to explaining the total variance in the importance of digital empowerment requirements as a dependent variable. To conduct the multiple regression analysis, the linearity of the study data and the normality of the data distribution were verified, and the results were as follows:

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	89.418	5.870		15.233	.000		
Age	-.625	.126	-.231	-4.979	.000	.923	1.083
Organizational Membership	.424	.142	.146	2.986	.003	.831	1.203
Cognitive Interaction	.598	.184	.172	3.249	.001	.710	1.408
Respondent's Education	.584	.191	.143	3.052	.002	.897	1.114
Monthly Family Income	.641	.135	.245	4.734	.000	.740	1.352
Leadership	.431	.140	.157	3.078	.002	.760	1.315
Innovation	.378	.158	.126	2.396	.017	.716	1.397

****Significant at the 0.01 level * Significant at the 0.05 level**



<i>Figure (3) represents the spread of the residuals with the expected values, and from it it becomes clear that there is no specific pattern for the residuals, and this is consistent with the linearity condition</i>	<i>Figure (2) shows that the remnants cluster around the line, and this confirms that the data are distributed according to a normal distribution</i>	<i>Figure (1) shows the histogram to indicate that the data are normally distributed</i>
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Figures (1, 2, 3) clearly demonstrate the random distribution of the residuals and their lack of a specific pattern. This confirms the linearity of the study data and the normality of the sample distribution, all of which are prerequisites for conducting stepwise multiple regression analysis.

The results of the multiple regression analysis showed that seven independent variables, when combined, significantly influence the perceived importance of digital empowerment requirements at the 0.05 level. The F-value was 19.772 (Table 22), the coefficient of determination (r^2) was 0.278, and the multiple correlation coefficient was 0.527 (Table 23). These seven variables collectively explain approximately 27.8% of the possible variance in the perceived importance of digital empowerment requirements. These variables are: age, education level, cognitive interaction, organizational membership, leadership, monthly household

income, and innovation (Table 24).

Based on the t-values in the studied function model, the results showed a significant impact of each of these seven variables on the degree of importance of digital empowerment requirements (Table 24). These independent variables can be ranked in descending order according to their relative importance in explaining the variance in the degree of importance of digital empowerment requirements, based on the values of the standard partial regression coefficients, as follows:

The age variable ranks first (-0.227), followed by the respondent's education variable (0.206), then the family's monthly income variable (0.184), then the cognitive interaction variable (0.151), followed by the innovation variable (0.146), followed by the leadership variable (0.142), and finally the organizational membership variable (0.099)

" We can partially reject the fourth statistical hypothesis and accept the research hypothesis. "Table (22) Value"					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	188146.898	7	26878.128	19.772	0.000
Residual	488018.296	359	1359.382		
Total	676165.193	366			
Table (23) Values of R, R Square					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
	0.527	0.278	0.264	36.870	

Table (24) Values of the Standard Partial Regression Coefficient.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	119.049	19.252		6.184	.000		
The respondent's education	2.727	.628	.206	4.345	.000	.897	1.114
Age	-2.003	.412	-.227	-4.864	.000	.923	1.083
Cognitive interaction	1.714	.604	.151	2.840	.005	.710	1.408
Organizational membership	.939	.466	.099	2.016	.045	.831	1.203
Leadership	1.270	.459	.142	2.766	.006	.760	1.315
Monthly family income	1.569	.444	.184	3.534	.000	.740	1.352

	Renewal	1.428	.518	.146	2.758	.006	.716	1.397
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** Significant at the 0.01 level * Significant at the 0.05 level.

RECOMMENDATIONS

-1 In light of the results showing that 8.72% of the respondents have a low to medium level of knowledge of the educational, training, social, and environmental requirements for their digital empowerment, and that their opinion on the importance of these requirements is also low by a percentage of 3.76%, therefore, the reasons for their low opinion on the importance of these requirements should be investigated, and programs and policies aimed at increasing their knowledge of the importance of these requirements should be developed to achieve their digital empowerment.

-2 In light of the findings indicating a high level of awareness among educated and working women regarding the educational, training, social, and

environmental requirements for their digital empowerment, the research recommends further efforts to improve the conditions of rural women, particularly in education. This can be achieved through continued government support for digital education, the provision of relevant curricula and programs (including expanding specialized university departments for the important field of digitalization), and the creation of job opportunities for them.

-3 More media programs and guidance messages should be directed towards women to inform them about ways to empower them in the field of digitalization and to work on changing the cultural heritage that marginalizes their role and potential in advancing their families and communities

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