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A Critical Reflection on Digital Literacy Skills and its Impact on Information Seeking Behavior of Small-Scale Women Farmers in Muvuti Kiima Kimwe, Kenya

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ABSTRACT

The study aimed to investigate the influence of digital literacy on information seeking behavior of small-scale women farmers in Muvuti Kiima Kimwe, Kenya. Utilizing The Big 6 Skills Model developed by Eisenberg and Berkowitz in 1987 as a framework, the study adopted a descriptive research design, allowing for the concurrent collection of both qualitative and quantitative information. The study's target population was approximately 17,059 small-scale women farmers from Muvuti Kiima Kimwe ward. Purposive sampling method was employed to select 143 small-scale women farmers. Data was collected using questionnaires which had both open and closed ended questions. Qualitative data from open-ended questions were examined through content analysis, while quantitative data were analyzed using descriptive statistics with the assistance of SPSS version 26. Small-scale women farmers indicated that they needed information to improve their agricultural activities. The study findings revealed that majority of the small-scale women farmers have never attended digital literacy training and have inadequate knowledge on how to seek for digital information and therefore they enlist the help of family members or friends. The government, through the Ministry of Information, Communications and Digital Economy, need to formulate clear policy aimed to initiate digital literacy training programs in rural areas targeting small-scale women farmers as a means for improving digital literacy in rural areas.

Key Words: *Digital literacy, information seeking behavior, information need, small-scale women farmer.*

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1.0 Introduction

As women play a central role in farming activities, they have diversified need for accurate and timely information. Information need is an anomalous state of knowledge necessitating a person to look for information so as to resolve the anomaly (Akanbi and Fourie, 2018). A study by Achugbue and Anie (2011) established that, rural women farmers in Nigeria need information on various topics like animal treatment, pest control, farm produce preservation, religion, health and economic matters. They use community leaders who they believe to be reliable sources of information. Soyemi (2014) reveals that in African countries, women are the primary drivers of food production, hence they form an integral part of agricultural productivity. He further notes that information needs of women farmers are diverse in nature and are linked with their farming activities like, post planting, fertilizer application, production and preservation, transportation, marketing and sales. According to Baro, Onyenania and

Osaheni (2010), information seeking behavior involves individual identifying that they need information, searching for information, selecting and utilizing relevant information to fill the identified information need. Sultana (2016) further states that information seeking behavior involves a sequence of activities that include need for information, searching, evaluation, selecting and finally using this information. Thus, it is a cognitive process that entails having knowledge of how individuals search, evaluate and utilize information, the information seeking channels and the aspects that encourage and discourage information use.

Information seeking behavior has dramatically changed with the rapid development of ICTs. Noh (2017) posit that rapid evolvement of information technology and the excessive amounts of new information systems and available resources, requires information seekers to rapidly develop their information seeking skills. Ugwunna, (2017) points out that compared to a decade ago, information production rate and dissemination has led to increased information access which is indispensable to effective decision making. This has led to a seamless digital environment in which information seekers have access to numerous information sources in a simple and easy manner independent of subject discipline, time and place. Digital literacy includes practices related to ICTs that are necessary for effective communication and performance at work and to be active in social affairs and better expression of opinions. According to Ng (2012), digital literacy has three dimension; technical, socio-emotional and cognitive dimension. Therefore, there is need for everyone from all walks of life to have skills for successfully using ICTs and interacting with digital information ecosystems (Machin-Mastromatteo, 2021). Small-scale women farmers equipped with appropriate digital literacy skills will easily access and make informed decision on how to safely utilize digital information as digital technology becomes more prevalent in our modern society.

The study aimed to investigate the influence of digital literacy on information seeking behavior of small-scale women farmers in Muvuti Kiima Kimwe, Kenya.

2.0 Literature Review

2.1 Theoretical Framework

The Big 6 Skills Model served as the theoretical foundation for this study. This model was developed by Eisenberg and Berkowitz in 1987 and it is widely used in teaching digital skills. The model covers six steps namely; task definition, information seeking strategies, location and access, use of information, synthesis and evaluation.

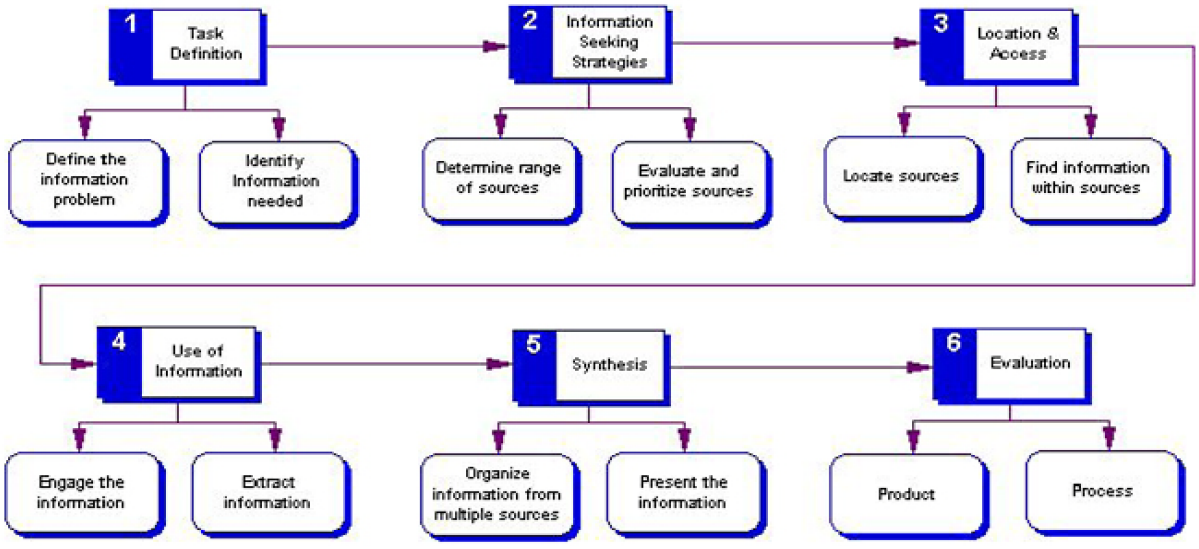

Figure 1 The Big 6 Skills Model

Source: (Eisenberg and Berkowitz, 1990)

The Big 6 Skills model is relevant to this study as it highlights useful, simple and systematic steps that information seekers should follow in order to obtain the most relevant information irrespective of the platform in which it is available.

2.2 Literature Review

Gebru, Yared and Gebremichael (2017) study in Tanqa Abergelle Wereda, Ethiopia investigated information seeking behavior and information sources of small-scale farmers. The study established that small-scale farmers dependent highly on informal information sources including farmer groups and model farmers, family, friends, personal experience, village meetings and neighbours in their decision making process on whether to use agricultural technologies to intensify their farming. The study noted that farmers lack skills in using ICTs to search for agricultural information. A study by Mabuie, Siueia and Monjane (2020) investigating farmers' information seeking behaviour in Mozambique established that there is high-level perception of information relevancy in agriculture activity. The study established that fellow farmers', government institutions, television, workshops and non-governmental organizations are essential sources of information for majority of the farmers. The study also established that digital literacy is increasingly being promoted through investment in digital technology in most sub-Saharan communities, thus, farmers' education on digital agriculture should be a priority for policymakers. Generalization could not be done without undertaking the current study as the study was carried out in a different setting. In Tanzania, a study by Msoffe and Ngulube (2016) examined poultry farmers' information needs. They noted that information need for awareness is passive, while information need for solving problem is immediate, time framed and purposive. Therefore, when information need is meant to solve a problem, the information seeker relies on informal sources like neighbours, colleagues, family and friends. Thus, regardless of the availability of modern information sources and formal channels, farmers in Tanzania rely on informal information sources. The study portrayed a glaring gap on digital literacy and how it effect information seeking behaviour of small-scale women farmers. This knowledge gap was filled by the present study.

3.0 Material and Methods

The study used descriptive research design. 17,059 small-scale women farmers from Muvuti Kiima Kimwe ward, Machakos County were targeted. Purposive sampling method was employed to select 143 small-scale women farmers. The instrument of research was a questionnaire. To maintain data reliability, errors were detected and removed during the cleaning process. Cleaned information was then coded by allocating numerical values to the responses, followed by descriptive statistical analyses. Data coding was conducted using Statistical Package for Social Sciences version 26. Descriptive statistics, including frequencies, means and standard deviations were summarized in tables and graphs, accompanied by a statistical analysis of the findings.

4.0 Results

The study sought to establish whether small-scale women farmers need information to improve their agricultural activities. The results are presented on Figure 2.

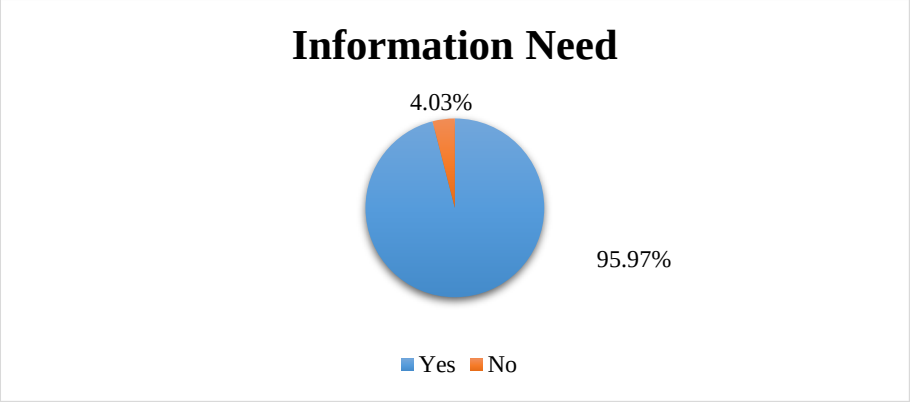

Figure 2: Information Need

Results in Figure 2 show that 119 (95.97%) of the small-scale women farmers indicated that they needed information to improve their agricultural activities. While 5 (4.03%) were of they the view that information was not a necessary in improving their agricultural activities. The study established that majority of the farmers know that information is a key ingredient that is essential in achieving maximum agricultural yield. A study by Cubos and Vargas (2021) pointed out that agricultural production can be enhanced through access to reliable, relevant and current information as it helps farmers make correct decisions in regards to management, land, labour, livestock, capital and market.

Searching for Digital Information

The study further sought to determine how small-scale women farmers search for digital information. Table 1 shows the feedback.

Table 1: Searching for Digital Information

Digital Information	Frequency	Percentage
1. I personally search for digital information	45	36.29
2. I enlist the help of family members or friends	79	63.71

Table 1 revealed that majority of the small-scale women farmers 79 (63.71%) have inadequate knowledge on how to seek for digital information and therefore they enlist the help of family members or friends. While, 45 (36.29%) can search for digital information on their own. Magesa, Jonathan and Urassa (2023) asserted that failing to access digital information is attributed to inadequate skills necessary for operating digital tools. According to Mallick and Anshuman (2024), bridging the digital literacy gap is critical as farmers struggle to access digital information using available ICT tools due to lack of basic digital skills. This is further supported by Qian and Zhang (2022) who posit that in the digital age, digital literacy is the principal literacy that farmers urgently need as access to digital information is the core foundation for agricultural revitalization and modernization.

Technical Skills

The small-scale women farmers in the study were asked to respond to a number of statements regarding their technical skills using a 5 point Likert scale rating and the results are presented in Table 2.

Table 2: Technical Skills (N=124)

Statement	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean	SD
1. I am able to operate a personal desktop or a laptop	49 (39.5)	23 (18.5)	31 (25.0)	13 (10.5)	8 (6.5)	2.26	1.262
2. I can connect a computer to a printer	37 (29.8)	28 (22.6)	32 (25.8)	17 (13.7)	10 (8.1)	2.48	1.272
3. I am able to print a document	41 (33.1)	26 (21.0)	24 (19.4)	21 (16.9)	12 (9.7)	2.49	1.358
4. I can download and install an application on my mobile phone	15 (12.1)	19 (15.3)	43 (34.7)	29 (23.4)	18 (14.5)	3.13	1.203
5. I am able to connect to Wi-Fi or turn on mobile data	11 (8.9)	13 (10.5)	46 (37.1)	34 (27.4)	20 (16.1)	3.31	1.136
Average Score						**2.73**	**1.246**

Key: *1= Poor, 2=Fair, 3=Good, 4=Very good, 5= Excellent*

Results in Table 2 reveal that majority of the small-scale women farmers have poor technical skills as indicated by three statements with means that lie between (M = 2.26 – 2.49). They can operate a personal desktop or a laptop (M = 2.26, SD = 1.262), they can connect a computer to a printer (M = 2.48, SD = 1.272) and they can print a document (M = 2.49, SD = 1.358). On the other hand, the small-scale women farmers indicated that they have good technical skills as indicated by two statements with means that lie between (M = 3.13 – 3.31). They can download and install an application on a mobile phone (M = 3.13, SD = 1.203) and they can connect to Wi-Fi or turn on mobile data **(**M = 3.31, SD = 1.136). The study established that majority of the small-scale women farmers have poor technical skills when operating computers or laptops while they have good technical skills when operating mobile phones.

According to a report by The Communications Authority of Kenya (2018), 95.1 % of the adult population had a mobile phone subscription and 42.9% percent had access to broadband internet. In support of the findings, Krell et al. (2021) asserts that the growing affordability of internet access coincides with an impressive number of mobile phone services like Twiga foods, Mkulima online, M-farm among others which are available for Kenyan farmers to utilize. This is supported by the findings of Awuor and Rambim (2022) which established that majority of farmers who own phones use the devices to access agricultural innovations for information related to weather patterns, financial facilities, farm inputs, marketing, pricing and transportation. The findings are in line with Khan et al. (2019) who revealed that due to convenience and access to current information, farmers in rural areas owned mobile phone which were used to access agricultural information. Kumar (2023) asserts that mobile phone use is important for agricultural development as it leads to greater socioeconomic relationships between farmers and the business community. The findings also correlate with Göncü and Koluman (2019) who noted that small-scale farmers avoid using computers due to cost and lack of knowledge on how to use computer in farming.

Cognitive Skills

The small-scale women farmers in the study were asked to respond to a number of statements regarding their cognitive skills using a 5 point Likert scale rating. The findings are presented in Table 3.

Table 3: Cognitive Skills (N=124)

Statement	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	Mean	SD
1. I can evaluate and select the most appropriate software program	48 (38.7)	36 (29.0)	22 (17.7)	13 (10.5)	5 (4.0)	2.12	1.159
2. I can search for information from a variety of digital information sources	50 (40.3)	29 (23.4)	26 (21.0)	11 (8.9)	8 (6.5)	2.18	1.237
3. I can evaluate and select the most appropriate digital information sources	45 (36.3)	31 (25.0)	38 (30.6)	7 (5.6)	3 (2.4)	2.13	1.051
4. I can select relevant information to satisfy my information needs	39 (31.5)	37 (29.8)	35 (28.2)	12 (9.7)	1 (0.8)	2.19	1.015
5. I can interpret digital information that is text-based or non-text based	44 (35.5)	33 (26.6)	27 (21.8)	16 (12.9)	4 (3.2)	2.22	1.159
Average Score						**2.17**	**1.124**

Key: *1= Poor, 2=Fair, 3=Good, 4=Very good, 5= Excellent*

As per results in Table 3, the respondents indicated that they have poor cognitive skills when evaluating and selecting the most appropriate software program (M = 2.12, SD = 1.159), when searching for information from a variety of digital information sources (M = 2.18, SD = 1.237), when evaluating and selecting the most appropriate digital information sources (M = 2.13, SD = 1.051), when selecting relevant information to satisfy my information needs (M = 2.19, SD = 1.015) and interpreting digital information that is text-based or non-text based (M = 2.22, SD = 1.159). The average mean score of 2.17 and standard deviation of 1.124 from Table 3 shows that majority of the small-scale women farmers have inadequate cognitive skills.

Kaeophanuek, Na-Songkhla and Nilsook (2018) posit that, cognitive dimension of digital literacy equips a person with high-level competencies which enable them to critically think when searching, evaluating and selecting relevant digital information. The findings are in agreement with Magesa, Jonathan and Urassa (2023) study in Tanzania that revealed that small-scale farmers have low digital literacy as they lack knowledge in four factors namely; searching, integrate, evaluating, and creating digital information. This is in contrast to a study by Bai et al. (2023) which shows that in China, ICT development and the deliberate practice of improving farmers' cognitive abilities has led to improved digital literacy levels.

Digital Literacy Training

The study further sought to determine whether small-scale women farmers have attended digital literacy training. The results are presented in Figure 3.

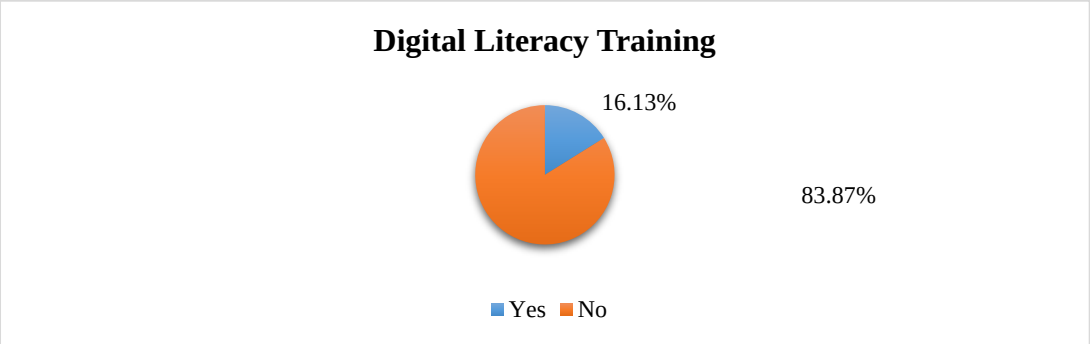

Figure 3: Digital Literacy Training

According to the findings presented in Figure 3, majority of small-scale women farmers 104 (83.87%) have never attended digital literacy training, while 20 (16.13%) indicated that they had attended digital literacy training. This was significant since it revealed less importance has been put on the significance of digital literacy training in rural areas. The findings concur with those of Magesa, Jonathan and Urassa (2023) who established that very few farmers attend training on basic computer use, accessing agricultural related information online and effective use of various social media platforms. In line with the findings, Hassani et al. (2022) established that majority of small-scale farmers have inadequate digital literacy skills due to a lack of relevant training that can increase their ability to adopt and effectively use ICT.

5.0 Conclusion and Recommendation

5.1 Conclusion

Majority of the small-scale women farmers have never attended digital literacy training which is essential in equipping them with digital skills that can assist them in navigating the digital environment safely and effectively. Lack of digital literacy skills is one of the major challenges that small-scale women farmers face when accessing digital information. Illiteracy is also another challenge that hinders access to digital information and this prompts the small-scale women farmers to prefer the use of traditional information sources that use local languages that they easily understand.

5.2 Recommendation

The government, through the Ministry of Information, Communications and Digital Economy, need to formulate clear policy aimed to initiate digital literacy training programs in rural areas targeting small-scale women farmers as a means for improving digital literacy in rural areas. The Ministry of Information, Communications and Digital Economy should regularly organize seminars and workshop in order to equip small-scale farmers with digital literacy skills on how to effectively and efficiently navigate the digital landscape and retrieve timely and relevant information. The government should ensure that small-scale women farmers are sensitized on digital literacy which is one of the 21st century skills.

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