# DIGITAL FINANCIAL INCLUSION AND WOMEN'S ECONOMIC EMPOWERMENT: A CASE STUDY OF BANDARAGAMA DS DIVISION

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### *Abstract*

*Digital financial inclusion promotes sustainable economic growth and it is a key facilitator for many sustainable development goals. It contributes to poverty reduction and enhances financial intermediation offering financial services through digital channels to people in society particularly encouraging the economic participation of women and empowering their economic well-being. Thus, this study examines how women can be empowered economically through digital financial inclusion among women entrepreneurs. Accordingly, the study collected primary data from registered women entrepreneurs and women-owned businesses of the Bandaragama Divisional Secretariat via the face-to-face interview method using a printed structured questionnaire and resulted in 146 responses. The study analysed data mainly through the Partial Least Squares Structural Equation Modelling using Smart PLS and two of the three hypotheses were supported by the study. The results of the study disclosed that usage and quality of digital financial services positively and significantly impact economic empowerment among women entrepreneurs. However, mere access to digital financial services did not show a significant effect on the economic empowerment of women. Thus, the study has contributed to the body of empirical knowledge by providing recommendations that encourage the use and access of quality digital financial products and services to empower women's economic well-being.*

***keywords:*** Digital Finance, Digital Financial Inclusion, Economic Well-being, Women Entrepreneurs and Businesses.

## INTRODUCTION

Development of the financial sector promotes the economic growth of a country (Bathula & Gupta, 2021). The utilisation of technology in the financial services industry has rapidly grown in recent years (Khera et al., 2022) and the digital financial sector has experienced rapid developments over the past few years that threaten the use of traditional financial services (Ismael & Ali, 2021). Digital finance plays a prominent role in the daily routines among people in all segments of society (Durai & Stella, 2019). Therefore, it generates more benefits leading to greater financial inclusion and it improves Gross Domestic Product (GDP), economic stability and financial intermediation. Furthermore, it helps marginalized people acquire assets, improve economic empowerment, increase women's participation in economic activities, encourage economic growth and stability (Ozili, 2022), reduce long queues at banks and financial institutions, minimize manual paper-based work environment, and save time and money (Narmadha, 2021). It also facilitates small business lending as digital finance facilitates greater access.

The concept of financial inclusion or inclusive finance refers to meeting their needs, enabling businesses and people to have access to financial goods and services that are useful and cost-effective (World Bank, 2022). Sri Lanka has made long-term attempts since the early twentieth century to improve financial inclusion and as a result of these attempts, Sri Lanka has made massive progress in financial inclusion (CBSL, 2021). According to Tay et al. (2022), in the later development of financial inclusion, digital financial inclusion is the latest or 4th phase of the financial revolution and it has become increasingly important to technology. They also highlighted that Information Communication Technology (ICT) has led to advancing financial inclusion enabling digital financial inclusion. Hence, the developmental stage of financial inclusion can be considered as digital financial inclusion. The concept of Digital Financial Inclusion (DFI) refers to minimizing the cost of financial services and expanding the reach of customers by intensively developing digital finance to attain the objectives of financial inclusion (Ozili, 2018). It contributes to poverty reduction and enhances the financial intermediation offering financial services through digital channels to people in society (Ozili, 2022).

Women's Economic Empowerment (WEE) is a broad concept and it refers to the ability of women to access financial services, business opportunities, and property rights (Reshi & Sudha, 2023). It leads to improvement in the lifestyle of women and the lives of those who live with them. Reshi and Sudha (2023) highlighted that women's economic empowerment can be identified as a key element in attempts to minimize gender inequality and promote sustainable development while reducing poverty. Moreover, efficient and better financial inclusion will assist in reducing gender inequality (Soekarno et al., 2020) and empowering women economically. As per Madsen (2020), women play a critical role in having a significant positive effect on the economy. Furthermore, Badullahewage (2019) emphasizes that women contribute to a majority of the world's work. Therefore, the economic empowerment of women is crucial in today's world to acquire economic growth and development. If women earn an income, it has a direct positive impact on her family and community. Therefore, in Sri Lanka, women's economic empowerment through digital financial services is important to enable them to fully participate in economic activities, make their own decisions and utilize their economic resources (Reshi & Sudha, 2023). Madurawala (2018) mentioned that there is a lack of financial literacy and financial management skills among both rural and urban women in Sri Lanka and that creates a barrier to the economic empowerment of women. Also, the economic level of women in developing economies is very poor (Badullahewage, 2019). Kulkarni and Ghosh (2021) explained identified some key obstacles that women face in accessing digital financial services such as language barriers, lack of awareness, and infrastructure. Therefore, as a developing country, women's economic empowerment is a crucial component to enhancing the economic development of Sri Lanka reducing poverty among women and improving their quality of life.

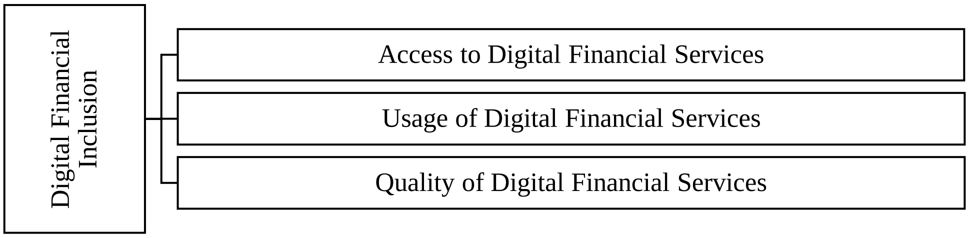
Technology is critical in today's world, but Sri Lanka's digitalization progress lags behind other developing economies (Sandaruwani, 2021). As per Wanigasinghe (2023), in most developing economies, including Sri Lanka, women have limited access to technology, as well as women have limited access to the internet which is 41% in developing countries. Pointing out that digital and computer literacy in Sri Lanka is low among women compared to men, she also emphasized that this disparity is a critical challenge faced by women in the country. Also, in Sri Lanka, most women are unaware of more efficient and newer digital-based financial services (Gunasekera & Arandara, 2020). A "digital gender divide" can even be seen in the Sri Lankan context, creating barriers for women to engage with technology (World Bank, 2020). Wijewardhana and Dias (2021) mention that women make up 51% of Sri Lanka's population but have low labor force participation. It reveals that the majority of Sri Lankan women are still economically inactive. Badullahewage (2019) points out that women living in developing countries are affected by poverty due to the burning issues. Sri Lanka is currently facing burning issues in all sectors of the economy, adversely affecting women's economic empowerment among poor women and women who are already economically empowered, such as women entrepreneurs. Furthermore, women in Sri Lanka still lag in accessing the formal financial sector compared to their male partners. Many women in Sri Lanka still depend on informal financial activities such as "seettu" to meet their financial needs. Consequently, this may reduce the ability of women's formal financial sector access. Thus, digital financial inclusion and economic empowerment of women are the most important components that enable a country's economic growth and development, especially to improve the quality of life of women and reduce poverty. Therefore, it is crucial to study how digital financial inclusion affects the economic empowerment of women entrepreneurs, who play a key role in economic growth and development. Finally, as a developing country, such a study is very important to ensure the sustainable development and economic growth of Sri Lanka.

## LITRATURE REVIEW

### Digital Financial Inclusion

Digital financial inclusion is broadly similar to the concept of financial inclusion while it is the expansion stage of financial inclusion that has evolved with technology (Banna et al., 2020). Lyman and Lauer (2015) explain it as access to and usage of traditional financial services by marginalized people digitally. Also, Evans (2022) mentions that digital financial inclusion is the usage of digital technology to deliver traditional financial services to financially excluded and vulnerable people affordably. Reduction of poverty, enhance financial intermediation, and achieve sustainable development goals through providing formal financial services utilizing digital devices and tools to all parts of society are the major objectives of digital financial inclusion (Ozili, 2022).

**Figure 1: Dimensions of Digital Financial Inclusion**




*Source: Goh et al. (2023), Khera et al. (2022), Ismael and Ali (2021)*

Access to digital financial services refers to how to engage with digital financial services (Goh et al., 2023). Thus, according to Goh et al. (2023), it can be measured through items like ownership of mobile devices and payment cards (i.e., debit or credit cards), internet and infrastructure accessibility, etc. The CBSL (2021) indicates that access means the demand-related obstacles (i.e., information or cost of financial services) to enter financial institutions faced by consumers. According to Kumari (2021), access refers to meeting daily financial requirements by letting people use conventional financial goods and services. Moreover, Ismael and Ali (2021) mentioned that this indicator means via using a mobile device or the internet, individuals can enter to utilise a bank account. As per CBSL (2021), the word usage denotes the utilisation of financial products or services by consumers. As per Goh et al. (2023), this indicator implies that to use digital financial services there should be demand and that demand is measured by using items such as utilising mobile money accounts to acquire salaries, make payments (i.e., to pay utility bills), and so on. Kumari (2021) reveals that usage is the amount to which an individual uses and continues to use conventional financial services. Pazarbasioglu et al. (2020) noted that enhancing the use of digital financial services assists in facing urgent situations (i.e., health emergencies) and brings the economy to betterment and growth. As per CBSL (2021), the term quality means, that financial goods and services have standards and that the quality of those products and services facilitates the choice of financial products and services for consumers to fulfill their needs. This indicator is measured by using items such as clear language, timelines, failures, understandability, etc. (AFI, 2019). Kumari (2021) said that to deliver quality services for customers, with the current technological enhancement, financial companies should reconsider their strategies. Sandanshive et al. (2022) presented that to accomplish digital financial inclusion and to acquire the expectations and needs of the customers, the quality of services in Internet banking is crucial and it should be consistently upgraded.

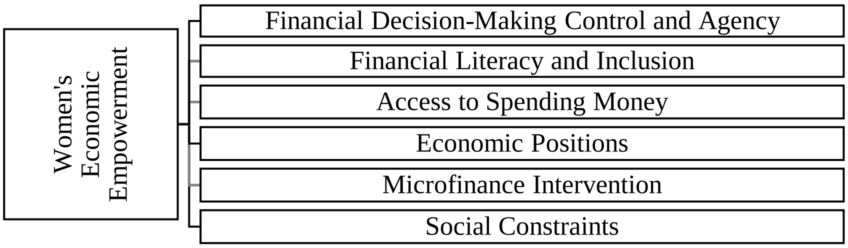
### Empowerment and Theory of Empowerment

Empowerment is a social procedure that involves various dimensions (Page & Czuba, 1999). The term has been in mainstream use since the 1980s and was commonly used to denote an employee engagement initiative (Wilkinson, 1998). According to Narayan (2002), empowerment is a widely used word and intends to enhance the ability to take action and make choices freely to shape a person's life. According to Sen et al. (2023), Julian Rappaport is allied with the term empowerment. Rappaport (1984) mentions that for strategy in the sectors of community and social involvement, as a model, empowerment is particularly relevant. He has further mentioned that obtaining proficiency in their lives, is a kind of procedure and a mechanism for individuals, communities, and institutions. Swift and Levin (1987) presented that processes and results are embodied in empowerment theory. However, Rappaport (1984) reveals that both these things of empowerment differ according to their external form. The reason is that no single standard fits every individual in every situation. Rappaport explains this by illustrating that to empowerment of a mother who belongs to the sixteen-year age required behaviors are unlike middle-aged widowed women's behaviors. Confirming it, Zimmerman (2000) stated that for various individual's empowerment holds various shapes in different scenarios. Moreover, Perkins and Zimmerman (1995) also mention that to facilitate a precise definition of the theory of empowerment, it is important to differentiate empowerment processes and their results. Thus, empowerment results or outcomes allow for examining consequences that arise in the empowerment process (Perkins & Zimmerman, 1995).

### Women's Empowerment and Women's Economic Empowerment

Nayak and Mahanta (2012) express that women empowerment denotes converting the lives of women and allowing them to be contented in life. Women play a special role in society to fulfill the necessities of the family and for its survival. Empowering women has a positive effect on their families, community, and future generations to achieve overall economic development. Sridevi (2005) states that in every part of life, women's empowerment allows women to understand their identity and capacity. Following Sen et al. (2023), it means, to make decisions on social and family obstacles and matters, enabling women to change their lives. They have further mentioned that to acquire development, the empowerment of women leads to maximizing available human resources and their amount and quality. Additionally, it facilitates women to make intelligent decisions which they refused earlier (Sen et al., 2023). Brody et al. (2015) stated that economic empowerment means women's potential to control, access, and own resources. Golla et al. (2011) highlighted that it is a dominant way for women to hone their capabilities and protect their rights. They also expose that if a woman can be successful along economically strong and has the capability to build and take action for economic decisions, then that woman is said to be economically empowered (Golla et al., 2011). According to Reshi and Sudha (2023), the capability of women to access financial services, business opportunities, and property rights can be identified as women's economic empowerment. Dejene (2007) mentioned that Economic empowerment of women has been identified as one way to minimize poverty and boost the growth of a country's economy.

**Figure 2: Dimensions of Women's Economic Empowerment**




*Source: Reed et al. (2021)*

Particularly economic empowerment among women should be measured and it is dominant (Reed et al., 2021). This study will proceed utilizing the dimensions or indicators presented by Reed et al. (2021). The first one is "Financial decision-making control and agency" which indicates how women have the power and right to make decisions on purchases, businesses, attaining loans, saving and investing money, etc. Second, "financial literacy and inclusion" refers to women's capability and confidence to use a financial network, and women's ability to hold a mobile or regular money account to use financial services. Third, "access to spending money" shows how women can freely access and pay their money. Fourth, "economic positions" which measured by using items like women's own properties and assets, their income, obtain to loans, etc. Fifth, "microfinance intervention" indicates entrepreneurship among women, and finally, "social constraints" include violence of male partners, absence of support for their children, etc.

## Empirical Literature

Mabrouk et al. (2023) explore how digital financial inclusion impacts the empowerment of women economically compared to Saudi Arabia's pre- and post-situations of the COVID-19 pandemic outbreak. The results of this research imply that crucially, the adoption of digital financial services is said to be high during the post-pandemic and also, after the pandemic, currently, women have the potential to make decisions than they take decisions before the pandemic. In addition to that, the results of the study revealed that digital financial inclusion positively affects the empowerment of women economically. Ojo (2022), evaluates previous literature to inspect how digital financial inclusion influences the economic empowerment of women who live in four African nations. The study drew on the literature to investigate how digital financial inclusion makes it possible for the economic empowerment of women living in four African countries and it highlighted that in African countries such as Ghana, Namibia, Lesotho, and Kenya digital financial inclusion uplift the economic empowerment of women. Appeynarh (2021) mainly focuses on examining the effect on women's economic empowerment of digital financial services in Ghana. Additionally, this study examines factors related to digital financial services that affect Ghanaian women. The results of this study discovered that among Ghanaian women, there is a notable relationship between digital financial services like ATMs, E-banking, mobile money, E-zwich, and socioeconomic indicators like ICT skills, autonomy, education, residence, and region. Also, the study stated that above mentioned digital financial services significant positive association with economic empowerment among Ghanaian women.

Yang et al. (2022) reveal how digital financial inclusion affects entrepreneurship among women. The study mentioned that digital financial inclusion notably boosts the entrepreneurship behavior of women in China and the advancement of digital financial inclusion motivates women to participate in entrepreneurship and enhances their work flexibility. They also found that digital financial inclusion leads to ease of financial barriers and it provides business details to reduce information barriers for women. Additionally, they highlighted that digital financial inclusion affects more on entrepreneurship among marginalized women with less education and a lack of financial independence. Elouardighi and Oubejja (2023) have investigated the connection between the digital aspect of financial inclusion with labor force participation among women living in Africa. Apart from that, this study has inspected obstacles faced by women to financial inclusion digitally. The study's findings show that than the conventional channels, financial inclusion digitally has a positive linkage with labor force participation among women. As an instrument of mobile money for digital financial inclusion (Ozili, 2022), Kim (2021) examines how mobile money impacts Nairobi women's financial inclusion. The results revealed that mobile money improves the financial inclusion of women in Nairobi and also revealed that the level of financial exclusion among women reduces mobile money. Soekarno et al. (2020) conducted research with the objective of studying the importance of the dimension of gender relation to digital financial inclusion and the findings of this study emphasized that digital financial inclusion in Indonesia has an important influence on behavioral intention for women.

Most scholars and academics have focused on financial inclusion with women empowerment and its economic aspect rather than using the concept of digital financial inclusion. Badullahewage (2019) investigates how financial inclusion affects empowerment among women economically in the Sri Lankan context. The results of the study mentioned that via empowering women, they can gain the power to change their own lives. She has further stated that in developing nations, microfinance can be considered a mechanism for women's empowerment. Al-Abedallat (2022) has focused on recognizing the causal factors for financial inclusion, women's reality in the labor market of Jordan and Arabs, and identifying financial services access obstacles faced by Jordan's economy and SMEs. It found that the increment of financial service access among females leads to achieving the economic chances and financial freedom of women. Also, the study reveals financial inclusion has a mutual relationship with the economic empowerment of women. Moreover, Nguse et al. (2022) inspect the government's strategies and rules on the economic empowerment of women via financial inclusion in Ethiopia and the results of this study indicate government's strategies and rules affect the economic empowerment of women and this relationship is a significant and positive one. In addition, the study emphasizes that there is a considerable positive and direct effect of financial inclusion in the economic empowerment of women. Abdo Alaghbari et al. (2021) identified the struggles and challenges faced by the inclusion of Islamic finance in empowering women economically in Yemen. Accordingly, the study revealed that the struggles and challenges such as customs and traditions, financial literacy among women, and ambiguous political terms in Yemen are faced by the inclusion of Islamic finance in empowering women economically. Bhatia and Dawar (2023) explore the behavior of financial inclusion with the women's empowerment economically and the results presented that financial inclusion concerning women facilitates the empowerment of them economically in a significant manner. Also, the study reveals that there is no lack of entry to financial companies among women who live in slums in urban areas.

Furthermore, Nawaz et al. (2024) have studied the association between financial inclusion and financial literacy identifying the relation between financial literacy and the economic empowerment of women. Also, the study has examined the mediating impact of financial inclusion on the connection between financial literacy and the economic empowerment of women. The results revealed that financial literacy has an effective and statistically stable impact on financial inclusion while it leads to an effect on the empowerment of women economically in a positive evident manner. Adera and Abdisa (2023) studied financial inclusion and its association with the economic empowerment of women in Ethiopia. The results revealed that broad access to financial services among women enhances their economic well-being. Additionally, this study also indicates that there is a substantial positive effect of financial inclusion and economic empowerment of women. To decide whether financial inclusion leads to empowering Iraq's women, Jedi (2022) conducted a study focusing on the connection between the empowerment of women and financial inclusion and the findings of the study emphasize that in Iraq's both public and private sections, engaging in the labor market of women is feeble however programs related to financial inclusion for women leads to empowering them economically. Additionally, the study reveals that indicators related to financial inclusion have a strong relationship with women's empowerment. Also, Kumar et al. (2022) emphasizes financial inclusion, economic empowerment, and economic growth intending to create a framework for researchers to study these variables together. The results of the study found that these variables are often used by different researchers but the variables have not been considered simultaneously. Moreover, Mutua and Juster (2021) conducted research aiming to explore the effect of financial inclusion on the empowerment of women and the results of the study revealed that financial inclusion affects the empowerment of women and if women can save and get credit, it will lead to more investment and startup of businesses.

Rachmadini and Damayanti (2023) studied how financial inclusion and literacy of finance impact the empowerment of women and the findings of the study revealed that for women living in West Java, financial inclusion positively affects their empowerment. Besides, Ejaz and Qayum (2023) have studied the financial inclusion roles to empower women, and in entering financial services, the obstacles faced by women. The study's results mentioned that there is a bifacial association between financial inclusion roles to empower women. In addition, Trivedi (2022) reveals that women who urban poor are benefit less from services of financial inclusion, and there is a notable impact on involvement in financial inclusion among urban women due to determinants like literacy of finance and borrowings.

**Methodological Literature**

The relationship among the variables in the current study was less evident in previous studies. Quantitative research can be applied if a study can be expressed quantitatively. Some scholars have applied the quantitative research approach to inspecting the relationship between digital financial inclusion and its services and the economic empowerment of women (Appeynarh, 2021; Mabrouk et al., 2023; Elouardighi & Oubejja, 2023). Also, many scholars have focused on the quantitative research approach to examine the behavior of financial inclusion and the economic empowerment of women (Adera & Abdisa, 2023; Bhatia & Dawar, 2023; Jedi, 2022; Nawaz et al., 2024). Moreover, Badullahewage (2019) has employed the qualitative research approach to examine that relationship. Furthermore, the mixed approach, which is a combination of quantitative and qualitative approaches, has also been used by some scholars to discuss the financial inclusion and empowerment of women and its economic aspect (Mutua & Juster, 2021; Nguse et al., 2022; Rachmadini & Damayanti, 2023). Primary data is the more reliable data that facilitates authentic results. However, in this field of study secondary data i.e. data developed by others (Adera & Abdisa, 2023; Appeynarh, 2021; Badullahewage, 2019; Elouardighi & Oubejja, 2023; Jedi, 2022; Mabrouk et al., 2023; Yang et al., 2022) have been used rather than primary data sources (Bhatia & Dawar, 2023; Mutua & Juster, 2021). As secondary data sources, many scholars have focused on sources such as the Financial Inclusion Insights (FII) Survey (Ejaz & Qayum, 2023), Global Findex Database (Elouardighi & Oubejja, 2023; Jedi, 2022), Global Financial Inclusion Database (Mabrouk et al., 2023), and China Family Panel Studies (CFPS) Survey (Yang et al., 2022). Apart from that, Rachmadini and Damayanti (2023) and Kulkarni and Ghosh (2021) have used both primary and secondary data for their studies. When considering the sampling techniques some academics have applied quota sampling (Kim, 2021), convenience sampling (Kulkarni & Ghosh, 2021), simple random sampling (Nawaz et al., 2024), and judgmental sampling (Nguse et al., 2022) techniques in this field of study. Also, they have used structured and semi-structured questionnaires in their research measurement using 5-point Likert scale questions (Bhatia & Dawar, 2023; Mutua & Juster, 2021; Nawaz et al., 2024).

As the unit of analysis, this field of study has been implemented by some researchers in different countries. Most researchers have focused on Least Developed Countries (LDCs) or developing countries such as Yamen (Abdo Alaghbari et al., 2021), Ethiopia (Adera & Abdisa, 2023; Nguse et al., 2022), Jordan (Al-Abedallat, 2022), Ghana (Appeynarh, 2021), Sri Lanka (Badullahewage, 2019), India (Bhatia & Dawar, 2023; Kulkarni & Ghosh, 2021; Kumar et al., 2022), Pakistan (Ejaz & Qayum, 2023), Africa (Elouardighi & Oubejja, 2023), Iraq (Jedi, 2022), Saudi Arabia (Mabrouk et al., 2023), Kenya (Mutua & Juster, 2021), West Java (Rachmadini & Damayanti, 2023), and China (Yang et al., 2022). When it comes to analysis techniques, to evaluate the relationship between digital financial inclusion and its services and the economic empowerment of women some scholars have used the Structural Equation Model (Appeynarh, 2021), the Probit Model (Elouardighi & Oubejja, 2023), and Ordered Probit Model (Mabrouk et al., 2023). Besides, Endogenous Switching Regression (Adera & Abdisa, 2023), Linear Regression (Bhatia & Dawar, 2023), and Content Analysis (Mutua & Juster, 2021) have been used by scholars to discuss the behavior of financial inclusion and economic empowerment of women. Furthermore, scholars have used STATA (Appeynarh, 2021), IBM-SPSS-AMOS (Nawaz et al., 2024), and SMART-PLS (Nguse et al., 2022) software in their studies as analysis software.

## Literature Gap

Discussing the existing knowledge in terms of theoretical, methodological, and empirical results gives new meaning to the current study by identifying its gaps. Thus, considering the theoretical gaps in this research, according to the best of the researcher's knowledge, there is lack of clear theoretical framework to evaluate the relationship between digital financial inclusion and the economic empowerment of women. Also, to the best of the researcher's understanding, financial inclusion has been considered along with women's economic empowerment, but how digital financial inclusion affects women's economic empowerment has been less considered. Moreover, for digital financial inclusion scholars have used only two dimensions such as access to digital financial services and usage of digital financial services without using the dimension of quality of digital financial services. Therefore, the quality of digital financial services is used in the present study to fill the gap of non-use earlier. On the other hand, many scholars presented various indicators to measure women's economic empowerment. However, in this study, dimensions presented by Reed et al. (2021) are utilized to measure women's economic empowerment as applicable to the present study.

Some scholars have studied the dependent variable as economic empowerment of women and the independent variable as financial inclusion. However, as the independent variable, the use of digital financial inclusion is very low. Most scholars have focused on poor women, women who live in slum areas, and marginalized women without focusing on women entrepreneurs who are part of economic well-being. Therefore, as per the objective of this study inspect the effect of digital financial inclusion on economic empowerment, especially by using women entrepreneurs. In the Sri Lankan context, the researcher found only one research paper that focused on financial inclusion along with women's economic empowerment that used a qualitative research approach without referring to digital financial inclusion. It implies that there is a lack of empirical evidence in Sri Lanka for the current study.

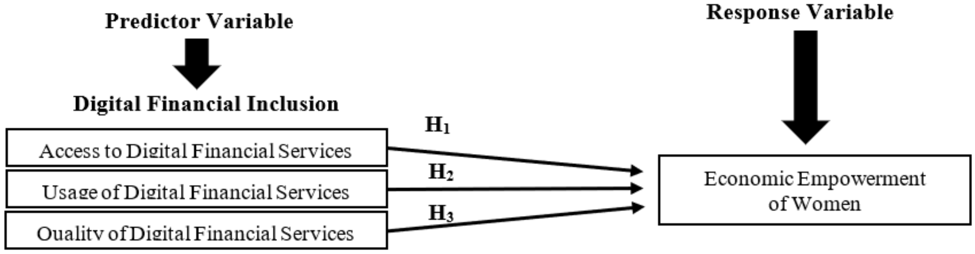
Given the current economic and political crisis in Sri Lanka, conducting such research is very important. Therefore, the current study fills that gap by conducting research mainly in the Sri Lankan context using a quantitative research approach.

In this field of study, most scholars have utilized secondary data sources rather than primary data. Primary data are more reliable data that leads to accurate results. Therefore, this study utilizes primary data sources to fill that gap. Scholars have focused on questionnaires based on 5-point Likert scale questions but use 7-point Likert scale questions in the current study. The reason is that it is a more reliable, easy-to-use measure and facilitates the measurement of the true assessment of the respondents. In addition, scholars have used sampling techniques such as probability and non-probability sampling techniques in their studies. However, the present study uses the census method which studies every unit of the population which was not used earlier to get more accurate results. Considering the data analysis technique, many scholars have used regression analysis but the present study uses the PLS-SEM model using the latest version. Thus, the present study fills the previous research gaps by adding freshness to this field of studying the effect of digital financial inclusion on the economic empowerment of women, especially among women entrepreneurs in the Sri Lankan context.

## METHODS

The reality of this study's research problem is objective. Hence, the research philosophical approach of this study can be identified as Positivism. Accordingly, this research will be performed under the deductive approach through the quantitative methods. The population of this study represents 164 registered women entrepreneurs and women-owned businesses of the Bandaragama Divisional Secretariat in the years 2023 and the first quarter of 2024 and the study has been done using the list of population elements obtained from the Bandaragama Divisional Secretariat. However, the study considered only registered women entrepreneurs and women-owned businesses in 2023 and the first quarter of 2024 to achieve a high response rate as many entrepreneurs have closed their businesses due to the spread of the COVID-19 epidemic and the present economic downturns in Sri Lanka. According to the Economic Census, Listing Data Base (2013) obtained from the Data Dissemination Unit, Department of Census and Statistics, the Bandaragama Divisional Secretariat was chosen because this Divisional Secretariat Division has an approximately high number of women entrepreneurs. The research is based on raw data via the face-to-face interview method using a printed structured questionnaire and this study focuses on examining the effect of digital financial inclusion on women's economic empowerment through seven-point Likert scale questions. The study employed the census method to achieve more accurate results by examining all 164 units of the population. However, only 146 responses were received, as 18 respondents refused to answer the questionnaire. The Smart PLS (Version 4) was used to perform analysis of data. This study mainly aims to analyze effect of the digital financial inclusion on the economic empowerment of women entrepreneurs in Sri Lanka through the Partial Least Square Structural Equation Modelling (PLS-SEM) and the study's dependent variable and independent variable can be considered as economic empowerment of women and digital financial inclusion respectively. Therefore, the study's conceptual framework is represented in Figure 3 as follows.

**Figure 3: Conceptual Model of the Study**




*Source: Developed by Researcher*

The questionnaire of this study was designed through the conceptual model presented in Figure. It was prepared in Sinhala language to get more responses and give the respondents a clear idea of the questions included in the questionnaire. Also, it was logically and simply developed considering the busy work behaviour of the respondents. Thus, the first section of the questionnaire collects demographic information of respondents consisting of 7 questions evaluating their age, religion, marital status, ethnicity, level of education, how many children they have, and monthly income. In the second part, digital financial inclusion, the independent variable of the study, is measured using 3 dimensions including 14 items. The last part of the questionnaire evaluates the dependent variable of the study, the economic empowerment of women using 6 dimensions including 18 items. Both dependent and independent variables are measured utilising the seven-point Likert scale questions employing the "Strongly Disagree" level to "Strongly Agree" scales. In order to obtain honest responses, the questionnaire was delivered to respondents as a printed one under the face-to-face interview method.

## Hypotheses Development

Ojo (2022) revealed that in any economy it is mandatory to access digital financial inclusion to empower women economically. Appeynarh (2021), mentions that through access to digital financial services, women can be empowered economically. It also stated that to develop and growth of women's companies, digitalization improves women's access to financial markets. Mobile money can be considered an instrument for digital financial inclusion (Ozili, 2022). Therefore, Kim (2021), highlighted that mobile money enhances financially excluded women's level of inclusion in finance by enhancing their accessibility to financial components. Also, Al-Abedallat (2022) mentions that financial service access enhancement of females leads to acquiring economic chances and financial freedom of women. In addition, Adera and Abdisa (2023) reveal that wider access to financial services among women enhances their economic well-being. Therefore, can be concluded that accessing financial services digitally significantly affects the economic empowerment among women.

**$H_1$: Access to digital financial services significantly effects on economic empowerment of women entrepreneurs in Sri Lanka.**

Appeynarh (2021), reveals that women can be empowered economically, through digital financial services utilisation. Elouardighi and Oubejja (2023) mention that to get away from poverty and to upgrade their living status, it is beneficial to motivate women to usage of digital financial services. Also, Kim (2021) highlighted that financial services usage makes better welfare and social position of women empowering them economically. Moreover, Dorfeitner and Nguyen (2022) reveal that women can be economically empowered with the usage of mobile money. Hence, it can be implied that the usage of digital financial services significantly affects the empowerment of women economically.

**$H_2$: The usage of digital financial services significantly effects on economic empowerment of women entrepreneurs in Sri Lanka.**

The quality of digital financial services is also can be considered a dimension of digital financial inclusion (AFI, 2019) that leads to the empowerment of women economically. Holloway et al. (2017) mention that to minimize poverty and increment economic growth, accessible and usable financial services that have quality are crucial. They also emphasized the importance of delivering successful and profitable financial instruments to empower women and reduce poverty, to improve their borrowing, savings, etc. Moreover, Appeynarh (2021) mentions that through the expansion of cost-effective, obvious, attainable financial products and services having high quality, women can benefit from digitization. Accordingly, can be implied that the quality of digital financial services significantly affects the economic empowerment of women.

**$H_3$: The quality of digital financial services significantly effects on economic empowerment of women entrepreneurs in Sri Lanka.**

## RESULTS & DISCUSSION

Table 1 provides the overall understanding of the respondents' demographic information representing their age, race, religion, education level, marital status, number of children they have and monthly income. It implies that most of them are above 30 years of age and have at least an O/L qualification. Also, most of the respondents are married and have 1 or 2 children.

**Table 2: Demographic Information of Respondents**

| Variable | | Number | % |
|---|---|---|---|
| **Age** | 25 Years and Below | 5 | 3.4 |
| | 26-29 Years | 24 | 16.4 |
| | 30-34 Years | 29 | 19.9 |
| | 35-39 Years | 45 | 30.8 |
| | 40-44 Years | 17 | 11.6 |
| | 45-49 Years | 11 | 7.5 |
| | 50 Years and Above | 15 | 10.3 |

| | | | |
|---|---|---|---|
| **Ethnicity** | Muslim | 1 | 0.7 |
| | Sinhalese | 145 | 99.3 |
| **Religion** | Buddhist | 136 | 93.2 |
| | Islam | 1 | 0.7 |
| | Roman Catholic and Christian | 9 | 6.2 |
| **Educational Level** | Lower Secondary Education (Grade 6 - 9) | 1 | 0.7 |
| | Up to A/L | 67 | 45.9 |
| | Up to O/L | 38 | 26 |
| | Technical and Professional Qualification Level | 37 | 25.3 |
| | Graduate and or above | 3 | 2.1 |
| **Marital Status** | Unmarried | 20 | 13.7 |
| | Married | 125 | 85.62 |
| | Widowed | 1 | 0.68 |
| **Number of Children** | No Children | 40 | 27.4 |
| | 1 Children | 48 | 32.88 |
| | 2 Children | 52 | 35.62 |
| | 3 Children | 6 | 4.11 |
| **Monthly Income** | Less than Rs 20,000 | 17 | 11.6 |
| | Rs 20,001 - Rs 40,000 | 38 | 26 |
| | Rs 40,001 - Rs 60,000 | 68 | 46.6 |
| | Rs 60,001 - Rs 80,000 | 18 | 12.3 |
| | Rs 80,001 - Rs 100,000 | 4 | 2.7 |
| | More than Rs 100,001 | 1 | 0.7 |

*Source: Results of survey data, 2024*

Outer loadings represent the correlation between latent variables and indicators of respective latent variables. Generally, as a reflective measurement model, if these indicator loadings are greater than 0.7 it can be considered an acceptable level (Hair & Alamer, 2022). After removing items that do not represent indicator reliability (< 0.7) new measurement model was derived. Thus, the following summary Table 2 provides the outer loading analysis of the new measurement model and all loadings are statistically significant.

**Table 2: Outer Loading Analysis of New Measurement Model**

| Variable | Indicator | Loadings | T statistics | P values |
|---|---|---|---|---|
| **Access to DFS** | AD_1 | 0.872 | 34.262 | 0.000 |
| | AD_2 | 0.848 | 25.432 | 0.000 |
| | AD_3 | 0.89 | 50.003 | 0.000 |
| | AD_4 | 0.882 | 39.247 | 0.000 |
| | AD_5 | 0.785 | 18.576 | 0.000 |
| **Usage of DFS** | UD_1 | 0.912 | 48.721 | 0.000 |
| | UD_2 | 0.909 | 52.087 | 0.000 |
| | UD_3 | 0.892 | 49.354 | 0.000 |

| | | | | |
|---|---|---|---|---|
| | UD_4 | 0.827 | 23.196 | 0.000 |
| **Quality of DFS** | QD_1 | 0.834 | 25.9 | 0.000 |
| | QD_2 | 0.903 | 42.758 | 0.000 |
| | QD_3 | 0.901 | 43.896 | 0.000 |
| | QD_4 | 0.886 | 32.155 | 0.000 |
| | QD_5 | 0.794 | 20.591 | 0.000 |
| **Economic Empowerment of Women** | ASM_1 | 0.853 | 29.187 | 0.000 |
| | ASM_2 | 0.827 | 24.888 | 0.000 |
| | EP_4 | 0.821 | 26.316 | 0.000 |
| | EP_5 | 0.809 | 23.774 | 0.000 |
| | FDMP_1 | 0.815 | 23.839 | 0.000 |
| | FDMP_2 | 0.835 | 26.403 | 0.000 |
| | FDMP_3 | 0.792 | 21.508 | 0.000 |
| | FLK_1 | 0.832 | 25.837 | 0.000 |
| | FLK_2 | 0.852 | 33.504 | 0.000 |
| | FLK_3 | 0.763 | 14.169 | 0.000 |
| | MI_1 | 0.798 | 18.104 | 0.000 |
| | MI_3 | 0.76 | 15.525 | 0.000 |
| | SC_1 | 0.774 | 23.958 | 0.000 |
| | SC_2 | 0.744 | 20.625 | 0.000 |

*Source: Results of survey data, 2024*

To examine the reliability of latent variables of the study Cronbach's Alpha and Composite Reliability were used in the study. Also, Average Variance Extracted (AVE) was used to test the convergent validity. Thus, as per Table 3, reliability and validity criteria were achieved its an acceptable level (> 0.7).

**Table 3: Reliability and Validity Testing**

| **Variable** | **Reliability** | | **Validity** |
|---|---|---|---|
| | Cronbach's AlphaValue | Composite reliability (rho_a) | Average Variance Extracted (AVE) |
| **Access to DFS** | 0.909 | 0.917 | 0.733 |
| **Usage of DFS** | 0.908 | 0.917 | 0.784 |
| **Quality of DFS** | 0.915 | 0.917 | 0.748 |
| **Economic Empowerment of Women** | 0.958 | 0.96 | 0.649 |

*Source: Results of survey data, 2024*

To check discriminant validity, the Fornell-Larker Criterion is another popular technique (Fornell & Larcker, 1981). In Table 4 below, the coloured cells are the square root of AVE. To establish discriminant validity in this way, these values should be higher than the correlations between the variables. Thus, here we can see that the square roots of all AVE values are greater than the correlations among variables indicating discriminant validity.

**Table 4: Fornell-Larker Criterion**

| Variable | Access to DFS | Usage of DFS | Quality of DFS | Economic Empowerment of Women |
|---|---|---|---|---|
| **Access to DFS** | 0.856 | - | - | - |
| **Usage of DFS** | 0.776 | 0.886 | - | - |
| **Quality of DFS** | 0.715 | 0.812 | 0.865 | - |
| **Economic Empowerment of Women** | 0.619 | 0.728 | 0.778 | 0.806 |

*Source: Results of survey data, 2024*

In the measurement model, after checking the necessary reliability and validity requirements, the researcher examined the data for its appropriateness before implementing the structural model. In this manner, the multicollinearity of indicators was checked using the VIF value. A value between 5 and 3 can be considered an acceptable level and has no collinearity issue  (Hair & Alamer, 2022). Therefore, according to below Table 5, all values are lower than 5 indicating there is no multicollinearity issue among indicators and variables.

**Table 5: VIF Values**

| Outer Model | | | | Inner Model | |
|---|---|---|---|---|---|
| **Indicator** | **VIF** | **Indicator** | **VIF** | | **VIF** |
| **AD_1** | 2.83 | **ASM_1** | 4.64 | **AD -> WEE** | 2.652 |
| **AD_2** | 2.542 | **ASM_2** | 4.168 | | |
| **AD_3** | 3.141 | **EP_4** | 3.57 | | |
| **AD_4** | 2.889 | **EP_5** | 3.437 | | |
| **AD_5** | 1.988 | **FDMP_1** | 4.326 | | |
| **UD_1** | 3.612 | **FDMP_2** | 4.821 | **UD -> WEE** | 3.798 |
| **UD_2** | 3.575 | **FDMP_3** | 2.925 | | |
| **UD_3** | 2.735 | **FLK_1** | 4.53 | | |
| **UD_4** | 2.181 | **FLK_2** | 4.487 | | |
| **QD_1** | 2.927 | **FLK_3** | 2.503 | **QD -> WEE** | 3.095 |
| **QD_2** | 4.263 | **MI_1** | 3.034 | | |
| **QD_3** | 3.569 | **MI_3** | 3.011 | | |
| **QD_4** | 3.087 | **SC_1** | 4.069 | | |
| **QD_5** | 1.961 | **SC_2** | 3.487 | | |

*Source: Results of survey data, 2024*

According to Table 6 suggested that access to digital financial services does not significantly affect the economic empowerment of women ($P > 0.05$) while usage and the quality of digital financial services significantly affect the economic empowerment of women.

**Table 6: Path Coefficients and their Significance**

| | Beta Value | T statistics | P values | Decision |
|---|---|---|---|---|
| **H1: Access to DFS -> Economic Empowerment of Women** | 0.021 | 0.259 | 0.796 | Not Supported |
| **H2: Usage of DFS -> Economic Empowerment of Women** | 0.27 | 2.327 | 0.020 | Supported |
| **H3: Quality of DFS -> Economic Empowerment of Women** | 0.544 | 5.645 | 0.000 | Supported |

*Source: Results of survey data, 2024*

As per Table 7, the $R^2$ value is 0.633 (63.3%) which indicates that 63.3% of the variation of the response variable is explained by the independent variables of this study. Thus, can be implied that the model has a relatively strong goodness of fit.

**Table 7: R Square**

| Model | Endogenous Variable | Exogenous Variables | R-square | R-square adjusted |
|---|---|---|---|---|
| **Economic Empowerment of Women** | Economic Empowerment of Women | Access to DFS<br>Usage of DFS<br>Quality of DFS | 0.633 | 0.625 |

*Source: Results of survey data, 2024*

F-square can be used to test the strength of the relationship among variables. Considering Table 7 there is no effective size among access to DFS and WEE while quality and usage of DFS and WEE have an effective size. Q square is used to test whether the model has predictive relevance or not. According to Table 8, the Q square value is greater than 0, which means that the model has predictive relevance.

**Table 8: F Square and Q Square**

| | F-Square | $Q^2$ predict |
|---|---|---|
| **AD -> WEE** | 0.000 | |
| **QD -> WEE** | 0.260 | WEE = 0.615 |
| **UD -> WEE** | 0.052 | |

*Source: Results of survey data, 2024*

## Discussion

Hypothesis 01 has been tested to achieve the objective of the study on the effect of access to digital financial services on economic empowerment of women entrepreneurs. However, the results revealed that access to digital financial services does not significantly affect the economic empowerment of women, rejecting H1 ($P > 0.05$). Considering past studies Appeynarh (2021), mentions that through access to digital financial services, women can be empowered economically. In addition, Adera and Abdisa (2023) reveal that wider access to financial services among women enhances their economic well-being. However, the results of the present study do not reveal that women are economically empowered by accessing digital financial services. Here, access to digital financial services dimension measured using literature-based items such as ownership of a mobile phone and a debit card or a credit card, access to digital infrastructure, accessibility to mobile money agents, and accessibility to the internet. This insignificance can sometimes be attributed to the difficulties faced by the respondents in accessing mobile phones, having a lack of digital literacy, and low-level trust in digital financial products and services as they mostly use traditional methods rather than digital methods to access financial products and services, and the availability of financial products in their areas, internet facilities, infrastructure and the current economic situation in Sri Lanka.

The study has tested Hypothesis 02 to achieve the objective of studying the impact of use of digital financial services on economic empowerment of women entrepreneurs in Sri Lanka. The results revealed that usage of digital financial services significantly affects the economic empowerment of women, accepting H2 ($P < 0.05$). Previous studies have confirmed this relationship and suggested that women can be economically empowered through the use of digital financial services (Appeynarh, 2021). Also, Kim (2021) highlighted that financial services usage makes better welfare and social position of women empowering them economically. Usage of mobile money accounts, usage of a debit or a credit card, payments via the Internet or online, and the make utility payments are the literature-based items considered to measure the usage of digital financial services. Therefore, it is clear that these items have some positive and significant effects on economic empowerment among women, indicating that the usage of digital financial services can lead women to make their own economic decisions and improve their economic well-being.

The study has tested hypothesis 03 to achieve the objective of identifying the qualitative effects of digital financial services on the economic empowerment of women entrepreneurs in Sri Lanka. The results revealed that quality of digital financial services significantly affects the economic empowerment of women, accepting H3 ($P < 0.05$). Previous studies have confirmed this relationship and mentioned that through the expansion of cost effective, obvious, attainable financial products and services having high quality, women can benefit from digitization (Appeynarh, 2021). Accessibility, easily understandable, adapted to local context and language requirements, transaction failure, and timelines are the literature-based items considered to measure the quality of digital financial services. Finally, it is clear that these items have some positive and significant effects on economic empowerment among women, indicating that the quality of digital financial services can lead women to make their own economic decisions and improve their economic well-being.

In this way, in summary, considering the three hypotheses developed in the study using the three main dimensions of digital financial inclusion to examine the impact on economic empowerment of women, the study revealed that the two dimensions (usage and quality) other than the access dimension have a significant impact on economic empowerment of women.

## CONCLUSION

According to the first specific objective of the study to examine how digital financial service access leads to the empowerment of women economically, the findings of the current research do not imply there is a significant relationship among those variables. This insignificance may be due to the difficulties faced by the respondents in terms of accessing mobile phones, internet facilities, infrastructure, and the current economic situation in Sri Lanka. Second, the results of the study emphasized that the use of digital financial services affects the economic empowerment of women, achieving the second specific objective of the study. Also, the results of the study showed that the quality of digital financial services affects the economic empowerment of women, fulfilling the third specific objective of the study. Thus, this study successfully meets two specific objectives of the study, generating new empirical results.

Sri Lanka is still a developing country and the current economic crisis has affected all sectors of the country. Also, Sri Lanka's digital profile is still lagging when compared to other countries. Therefore, Sri Lanka should implement proper policies and invest more in development strategies to achieved the higher development stage. Development of the financial sector also makes a country rich. Furthermore, the economic empowerment of women entrepreneurs is another distinguishing feature for achieving high economic growth. Therefore, considering the results of the present study, appropriate policies can be formulated to improve women's economic empowerment and digital financial inclusion.

It is necessary to implement digital infrastructure to reduce time wastage and increase the productivity of women's businesses to generate more revenue. In this way, the institutions responsible for developing infrastructure should develop quality digital infrastructure to enhance the usage of digital financial services. Therefore, to enhance the quality of digital financial products and services needs to faster transaction times, lower fees, and better customer service, which can lead to increased economic empowerment. According to the study, most women are married and have one or more children. This means that many women work with hectic environmental schedules and need proper internet facilities and infrastructure to improve their economic well-being by accessing digital financial services. Also, it is important to organize programs related to the financial education at the regional or village level to improve digital financial literacy and digital literacy covering topics like digital financial tools for business management, online safety, and cybersecurity among women entrepreneurs and implement digital infrastructure to reduce time wastage and increase productivity in women's businesses.

Furthermore, institutions responsible for providing digital financial services should deliver digital financial services to women that are flexible, easy to understand, tailored to the local context, and reduce transaction failure by developing mobile-based financial services through arranging government and international level programs and workshop for technological developers such as World's Bank financial inclusion programs, FinTech (Financial Technology) growth programs, and national level financial literacy campaigns. Moreover, digital platforms such as banking apps and software should be designed in a cost-effective and user-friendly manner, and banks and financial products should be designed to suit the needs of women to exclude them from informal finance giving financial or non-financial motivations. There is an unnecessary fear among women to change with the rapidly changing technological environment. Maybe some of them think that the education level is a barrier and fear using even mobile banking apps. Also, women who are still in the start-up stage of their businesses need a security from financially. Most probably women may give up their business because of family reasons. Some cannot make financial decisions alone because have an impact on families. They need to be encouraged that even if they are not born into a rich family, lack of economic background or lack of assets are not issues to worry about. Therefore, it is important to provide awareness programs to strengthen women entrepreneurs and encourage them to use digital financial services. This can be an incentive for them to succeed.

Due to the difficulty in studying all registered women entrepreneurs and women businesses in Sri Lanka, only registered women entrepreneurs and women businesses in Bandaragama Divisional Secretariat were selected for this study. Also, only women entrepreneurs and women-owned businesses registered in 2023 and the first quarter of 2024 are used for this study. Accordingly, the reason for choosing this time frame is that due to the economic crisis and COVID-19 pandemic in Sri Lanka, many people are unable to continue their business activities and have to close their business activities. Moreover, this study considers only women entrepreneurs rather than other entrepreneurs such as youth, males, etc. Furthermore, the study utilises only the population size of 164 registered women entrepreneurs and women-owned businesses for this research using the census method without applying a sampling technique. Additionally, this study has only used literature-based dimensions of key variables without considering new dimensions that should be included with the current economic situation in Sri Lanka, and data collection from women entrepreneurs and women-owned businesses for this study is done on a one-time basis (Cross-sectional research). Therefore, by overcoming these limitations of current research, researchers can improve current research in the future by enabling new knowledge.

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