

Digitalisation of business operations and empowerment of female entrepreneurs in Ghana

Abstract

This study aimed to analyse digitalisation's effects and empowerment on female entrepreneurs in Ghana. The study used a quantitative cross-sectional design to collect data from a convenience sample of 158 female entrepreneurs in Ghana. The results show statistically significant positive effects of digitalisation on the respondents' economic, relational and psychological empowerment. The findings suggest that digitalisation is an important phenomenon for female entrepreneurship since it has become globally vogue, with its multiplying effects. As a result, female entrepreneurs should undergo orientation on the understanding, usage and effective management of digital platforms and services to have positive returns on their investments and business operations.

Keywords: digitalisation, empowerment, female entrepreneurs,

Introduction

Digitalisation of business operations is fast gaining ground on the ticket of massive developments in information communication technology (ICT), the Internet of Things and, in recent times, the importance of upgrading offline operations into online activities due to the 2019 Corona Virus pandemic (COVID-19). The pandemic is said to have affected millions of businesses worldwide through limited human movement and contacts, leading to reduced investments, sales and profitability and business closures (Elam et al., 2021; Shen et al., 2020). According to the World Economic Forum's (2020) report on the Future of Jobs, 84 percent of employers are said to digitalise working processes, while the unemployed emphasise acquiring digital skills.

The report further notes that globally, between 62 percent and 90 percent of businesses in 14 sectors, including agriculture, food and beverage (80%), manufacturing (82%) and financial services (90%), are likely to adopt e-commerce and digital trade by 2025. These developments indicate the pivotal role of digitalisation of business operations for survival, growth and development (Elam et al., 2021). This is particularly important to the survival and growth of female-led enterprises. It also empowers female entrepreneurs, especially their psychological, relational and economic empowerment (Alkhaled & Berglund, 2018; Kabeer, 2020).

Entrepreneurship is regarded as a critical tool for women's empowerment and for realising the Sustainable Development Goals (SDGs). However, female entrepreneurs battle with numerous peculiar challenges that hold back their empowerment and the attainment of the SDGs. Feminist theories, grounded in gender discrimination, offer comprehensive insights into the challenges from various angles. For instance, the liberal feminist theory highlights unequal and limited access to resources, while the feminist standpoint theories analyse socio-cultural and structural impediments to women's advancement (Hekman, 1997; Marlow, 2020). Research shows that these drawbacks confine most female entrepreneurs to practising entrepreneurship in low-income sectors. That includes subsistence agriculture, retail trade and care work and are saddled with a small customer base, infrastructural and growth challenges and a high failure rate (Boohene, 2009; Foss et al., 2019).

In recognition of digitalisation power solutions to those obstacles, the 2020/2021 Women's Entrepreneurship report emphasises its crucial role. It contributes to expanding market focus and growth of women's enterprises (Elam et al., 2021). In spite of the relevance of digitalisation to female entrepreneurship development and female empowerment, existing research accounts for less of this phenomenon. As an emerging research field, there is a deficit of insights into the forms of transactional digital platforms and services that women entrepreneurs, especially in developing countries in Africa, use and the extent to which this form of digitalisation drives psychological, relational and economic empowerment of these entrepreneurs. As a result, this study aimed to analyse the use of digital platforms and services in business transactions and the empowerment of female entrepreneurs in Ghana.

The paper provides a review of related literature in the next section. The methodology, results and discussions follow and end with conclusions and recommendations.

Literature Review

This section will discuss digitalisation, the concept of empowerment and digitalisation and female empowerment

Digitalisation

According to Kuusisto (2017), digitalisation is organisations' use of digital assets to improve their performance and the effects of digital technologies on how the world works. It is thus the adaption of a system, or process, to use computers and the internet for business or trading (Tech Target, 2022). It describes the transition from an industrial age characterised by analogue technologies to an era of knowledge and creativity characterised by digital technologies and digital business innovation. Digitalisation becomes effective when digitisation converts

analogue data into digital form ((Almeida et al., 2017). Digitalisation allows companies to sell goods without their physical presence and reach the digital platform through digitisation. Thus, digitisation is when products, text, pictures, sounds, and messages are converted into digital format and processed by a computer. The information makes preserving, accessing and sharing easier (Tech Target, 2022). Female entrepreneurs digitise and digitalise many products and economically empower themselves.

According to Briggs (2022), “digital empowerment is what assists organisations in opening up the knowledge, experience, and values that people already have – it is about discovering and releasing the power of your people in a controlled and focussed way” (p1). Empowering women digitally in businesses means they could transform and become more strategic (McKeown & Durkin, 2017). The Ghanaian woman has access to many digital platforms, including Facebook, Twitter, WhatsApp Messenger, Mobile Money Transfer (MOMO) and Short Message Services (SMS). They transact business through digital devices such as phones, desktops, or laptops.

Schillo and Ebrahimi (2022) reiterated Huang, Zhao, and Chen's (2007) argument that a business is considered digital only when its web portal is crucial to business activities and decision-making. The business is carried out mostly through online content and web applications. Through digitisation and digitalisation, Ghanaian women offer products to customers and clients. Because of customer relationships, they economically and socially empower themselves. Also, doing business effectively on digital platforms and increasing their income contribute to empowering them financially and politically. Digitally empowering women is not far-fetched as it adds to the revolution of giving them the economic power to transform themselves. Besides, digitally empowering women could economically develop many women (Tsan, M., Totapally, Hailu & Addom, 2019). Economic development and technological growth create changes in labour markets (Kogiso et al., 2017), and this change in women's life will enhance their choices.

The concept of empowerment

Empowerment is an active process of enabling women to realise their identity, potentiality and power in all spheres of their lives (Prasad, 2012). Thus, the change process, which often begins within the individual and addresses women's needs, is empowerment. One of the central pillars of empowerment is agency, which correlates to women's ability to make strategic life choices in a situation where this ability was previously denied to them (Tursunova, 2014). Agency is

exercised through mobilising valued resources such as education, economic opportunities, and decision-making positions, which are the means of strength distributed through the various institutions and relationships (Boateng, 2017).

Women's empowerment means giving equal status to women and giving them the capacity and ways to direct their lives towards desired goals. For women to consider themselves to have confidence in whatever they do and access resources to perceive that they can make choices shows that they are empowered (Afshar, 1998). Empowering women has been a catchphrase in the millennial as the concept appeared in the phases of the two global goals; the Millennium Development Goal 3 (gender equality and women empowerment) and the Sustainable Development Goal 5 (gender equality and empowering all women and girls). Therefore, empowering women economically, socially, and politically has been on the agenda of many scholars, as the concept has gained greater awareness (Dejene, 2007), and it is trending in the technological and digitalisation period.

Empowering women is a crucial step toward attaining sustainable development on a global scale. Women are a nation's most valuable resource. It is important to acknowledge that women shape and construct a country's future. However, women have less access to power, including less favourable cultural ideals, greater social obligations to uphold, and access to resource management. Numerous areas of daily life, including access to education, job prospects, and economic abilities, exhibit this gender imbalance (United Nations Development Programme [UNDP], 2015). When feminists in the third world became dissatisfied with the predominantly apolitical and economic WID, WAD, and GAD models in development interventions during the 1980s, there were significant critiques and discussions about women's empowerment.

The framework and technique known as empowerment have been developed to overcome inequality. It means that women have the power to influence how their daily lives are conducted in the social, economic, and political spheres. It is that kind of power which enables them to move from the periphery to the centre stage. Sen (1993) defined empowerment as changing the power dynamics that limit the choices and autonomy of women and negatively impact their health and wellbeing. The definition offered by Batliwala (1994) is explicated in terms of the degree of control that individuals have over external actions that affect their welfare. According to Keller and Mbewewe (1991), it is a process whereby women learn to organize themselves in a way that increases their level of independence. It asserts their right to

make decisions independently and take charge of the resources necessary to challenge and overcome their subordination.

Kabeer goes beyond these definitions by asserting that empowerment is questioning the status quo and thinking outside the box. He further defines this concept as expanding people's capacity to make wise decisions in situations they had not previously been able to do so (Kabeer, 2001). Theorising of empowerment places a strong emphasis on two main perspectives: one more individualistic, namely through women's capacities and the right to freedom of expression of personal choice (Kabeer, 1999), and one more collectivistic, namely through collective behaviour and adherence to cultural norms that emphasize collective growth (Budgeon, 2015; Kurtiş, Adams & Estrada-Villalta, 2016).

Digitalisation and female empowerment: hypotheses development

The effects of digitalisation on female empowerment occupy a central space in contemporary research on women empowerment. As an emerging field of inquiry, researchers have given attention to topics such as digital platforms use and women empowerment in the health sector (Al Dahdah, 2021; Kontos et al., 2014; Maxwell et al., 2021); in social work and politics (von Dop et al., 2016) and business (Buer et al., 2021; Lal, 2022). Buer et al. (2021) and Yu et al. (2021) investigated the phenomenon and affirmed the under-researched universally acclaimed digitalisation relevance.

While Buer et al. (2021) established a positive digitalisation contribution to performance, Yu et al. (2021) found an inverted-u-shaped relationship between the two variables. It indicates the tendency for enterprises to report negative returns from digitalisation. Similarly, Schillo and Ebrahimi (2021) reported a negative relationship between digitalisation and women's access to venture capital funding.

In view of the mixed results in the literature, this paper relies on non-directional hypotheses to predict that (*Hypothesis 1 = H1*):

H₀: Digitalisation of business transactions will have no significant effect on the economic empowerment of female entrepreneurs.

H₁: Digitalisation of business transactions will have a significant effect on the economic empowerment of female entrepreneurs.

Digitalisation and the psychological and relational/social empowerment of females in their productive roles has, generally, not been a subject of investigation. Scholars emphasise the importance of the psychological empowerment of females but, ironically as Miniesy et al. (2022) note, it is often not assessed in empowerment studies. Considering the fact that female empowerment is incomplete without fulfilment of the psychological dimension, we draw on previous research by Alam et al. (2009) and Ye and Yang (2020) which confirmed the importance of digital platform use to the psychological empowerment of females to hypothesise that (*Hypothesis 1 = H2*):

H₂: Digitalisation of business transactions will have a significant positive effect on the psychological empowerment of female entrepreneurs.

Prior research, for example, by Alam et al. (2009) in rural Bangladesh and Ye and Yang (2020) in India, confirmed the positive role of digital platform use in fostering, among other things, social empowerment of women. These studies underscore the likelihood of a positive contribution of digitalisation to the social empowerment of female entrepreneurs in this study was conducted in a developing country setting which is quite similar to that of Bangladesh and India. Miniesy et al. (2022) further established in a related study in India that the relational/social empowerment of women entrepreneurs was more evident than the other forms of empowerment. As a result, the third hypothesis of the study is that (*Hypothesis 1 = H3*):

H₃: Digitalisation of business transactions will have a significant positive effect on the relational empowerment of female entrepreneurs.

Methodology

The quest of this research to analyse the effects of digitalisation of business transactions on the empowerment of female entrepreneurs necessitated the adoption of the post-positivist philosophical worldview and the quantitative research approach. Creswell and Creswell (2018) identify the post-positivist research paradigm as an avenue for identifying and assessing the causes that influence outcomes. The literature on digitalisation of business operations in Ghana reports wide adoption of mobile money services by entrepreneurs in their business transactions (Penney et al., 2021). However, there is a research gap on female entrepreneurs' use of such

services and other digital platforms and the degree to which they advance their empowerment, requiring a survey.

The target population were female entrepreneurs in the Cape Coast Metropolis of Ghana. Due to a high degree of informality and the absence of a comprehensive register of female entrepreneurs in the Metropolis, the accessible population comprised all female entrepreneurs who were available and willing to participate in the study. Through convenience and snowball sampling, 176 female entrepreneurs participated in the cross-sectional survey in August and September 2022. The research participants completed a self-administered questionnaire that sought, among other things, information on the types of digital platforms and services they use in their business transactions, the extent of use, psychological empowerment, social empowerment and economic empowerment as a result of the usage experience.

Mobile money services, social media platforms including WhatsApp, Twitter and Facebook and online marketing platforms like Jiji and Tonaton were among the platforms that were examined. Kuusisto (2017) defined digitalisation as all digital communication technologies, automated systems, and data-storing devices. The study used a seven-point Likert-type scale to measure the digitalisation of business operations in terms of the extent of use of the above-mentioned digital platforms in business activities (see Appendix).

The measurement of female empowerment drew upon insights from women empowerment scales by van Dop et al. (2016), specifically on service user psychological empowerment scale and Lal (2020) on social/relational empowerment and economic empowerment. Eight items constituted the psychological empowerment scale, while the relational and economic empowerment scale had six items each (see the Appendix). On a scale of 1 to 7, representing least extent to high extent, respondents were asked to rate the degree to which digital platforms and services had empowered them.

Screening of the survey questionnaires resulted in the rejection of 20, of which one was scanty, while the remaining 19, per the indication of the gender of the respondents, were filled by men and were therefore excluded from the analysis. Descriptive analysis, including frequencies and means, was carried out with the IBM SPSS Version 25, while inferential analysis was conducted with the partial least squares structural equation modelling (PLS-SEM).

Results and Discussions

Background characteristics and descriptive statistics

The study examined the age of respondents, level of education, type of economic activity and years of operation. Most respondents (65%) were below 30 years, while the least (3.8%) were above 50. This reflects that most respondents were from the University of Cape Coast entrepreneurial eco-system, which hosts young female student entrepreneurs from within and outside the university. As a result, more respondents (82.1%) had or were pursuing tertiary education or training, whereas 5.1 per cent had never been to School. Of the remaining respondents 3.2 percent, 7.7 percent and 1.9 per cent had basic, secondary school and vocational/technical education, respectively.

Trading was the main business activity (41.1%), followed by service provision (17.2%) and tailoring (11.9%). The less engaged economic activities were cooking and baking (9.2%), farming and aquaculture (7.3%), agro-processing (6.6%) and manufacturing (6.6%). The majority of the respondents (52%) had been in business for one to five years while 21.7 percent had less than one year of experience running their businesses. An appreciable number of respondents (17.1%) indicated that they had been in business for 6 to 10 years. The rest of the respondents had operated their businesses for more than 11 to 30 years.

The respondents used numerous digital platforms and services, including Facebook, Tonaton/Jiji, Hubtel, Kikuu and Jumia. However, the leading digital platforms and services used by the respondents were WhatsApp (M=5.92, SD=1.55) and mobile money services (M=5.69, SD=1.56). Descriptive statistics on the extent to which digitalisation empowers the respondents demonstrate mean scores between M=4.36 and 5.92 for all the items that measured psychological, relational and economic empowerment, which are above the theoretical mean of 4, meaning the extent of influence is high.

Effects of digitalisation and empowerment of female entrepreneurs

Data analysis

The dataset was checked for accuracy of data entry and missing values before the quantitative analyses; cases with too few or no responses in the variables were eliminated from the dataset. We used the two-step procedure suggested by Hair et al. (2019) for PLS-SEM analysis (i.e., an

assessment of the measurement model and the structural model) to test hypothesised model. The decision to use the PLS-SEM, based on the goal of the study, was to estimate "the model's indicator variables and the structural path without imposing distributional assumptions on the study data" (Hair et al., 2019, p.2). Also, the PLS-SEM accounts for total variance and uses total variance to estimate parameters as opposed to covariance-based structural equation modelling (CB-SEM) (Hair et al., 2017b).

Measurement Model

Before testing the hypothesised relationship, a partial least square was used in performing confirmatory factor analyses (CFA). Specifically, the model tested psychometric properties, including construct reliability, convergent validity, and discriminant validity. This was achieved by way of assessing the model's Cronbach's alpha (α), composite reliability (CR), rho_A, indicator reliability (which was evaluated by considering factor loadings [FL]), average variance extracted (AVE), and discriminant validity. Six digital platforms (Hubtel, Jiji, Tonaton, Kikuu, Jumia and Twitter) for measuring the digitalisation of business operations were deleted due to weak loading and incomplete data. Table 1 shows that all the α of the constructs of the variables except those measuring digitalisation of business transactions met or exceeded the threshold of .70 (Hair et al., 2019).

Furthermore, the values of CR for all the variables (0.747-0.941) met or exceeded the expected threshold (Hair et al., 2019). In terms of the FL, all FL estimates, except for Facebook, Instagram, Momo and PE5, met the acceptable limit. This indicator was retained because it improved the measurement model's performance, which is consistent with Hair et al.'s recommendation (2019). Regarding rho_A, all the estimates, except those for digitalisation of business, met or exceeded the threshold. We also tested convergent validity by assessing the average variance extracted (AVE). In Table 1, the AVE for all the variables except those for digitalisation of business activities also met or exceeded the threshold indicating no issues with the convergent validity.

Table 1: Construct Factor Loading, Reliability, and Convergent Validity

Constructs	Code	FL	CA	rho_A	CR	AVE
		α				
Digitalisation of business transactions	Fbook	0.638	0.550	0.556	0.747	0.425
	InstGram	0.601				
	Momo	0.655				
	Wapp	0.710				
Economic Empowerment (EE)	EE1	0.794	0.902	0.922	0.924	0.672
	EE2	0.851				
	EE3	0.902				
	EE4	0.889				
	EE5	0.761				
	EE6	0.705				
Personal and Psychological Empowerment (PE)	PE1	0.757	0.892	0.902	0.913	0.568
	PE2	0.781				
	PE3	0.778				
	PE4	0.783				
	PE5	0.691				
	PE6	0.705				
	PE7	0.773				
	PE8	0.754				
Relational Empowerment (RE)	RE1	0.812	0.921	0.925	0.941	0.761
	RE2	0.915				
	RE3	0.930				
	RE4	0.879				
	RE5	0.821				

Discriminant Validity

As aforementioned, the discriminant validity of the model was evaluated by considering HTMT. From a conservative threshold, a latent construct has discriminant validity when that HTMT ratio is below 0.850 (Henseler et al., 2015) and the confidence interval, showing the range into which the real HTMT population value will fall, must not possess the value 1 (Hair et al., 2017). In Table 2, the estimates related to the HTMT (0.539-0.799) met the tolerable limit. Therefore, based on the results, there were no issues with discriminant validity in the data.

Table 2: Heterotrait-Monotrait Ratio

	1	2	3	4
1. Digitalisation of business transactions				
2. Economic Empowerment	0.462			
3. Psychological Empowerment	0.479	0.786		
4. Relational Empowerment	0.452	0.770	0.799	

Structural Model

After evaluating the psychometric properties of the model, we assessed the structural model. The structural model was evaluated for the model's predictive accuracy and predictive relevance. This was done by considering R-Square (R^2), and Stone-Geisser's Q Square (Q^2) effect size (f^2), and multicollinearity (which was evaluated using VIF) (Hair et al., 2019). Table 3 suggests that digitalisation of business transactions predicts (explains) 11.3% of the variance in economic empowerment. Also, digitalisation of business transactions predicts (explains) 12.1% of the variance in personal and psychological empowerment. In addition, digitalisation of business transactions predicts (explains) 10.8% of the variance in relational empowerment.

The f^2 values suggest that digitalisation of business has a small effect on economic empowerment ($f^2=0.127$), personal and psychological empowerment ($f^2=0.138$), and relational empowerment ($f^2=0.121$). Also, in Table 3, all the values related to the Q^2 , were 0 and above, indicating that the model achieved predictive relevance. To check for multicollinearity, VIF was used (Kock, 2017). Table 3 indicates that our model has no multicollinearity problems because the VIF values were less than 3.3 (Kock, 2017).

Table 3: Structural Model

Constructs	R^2	R^2 Adjusted	f^2	Q^2	VIF
Digitalisation of business transactions	-	-	-	0.000	-
Economic Empowerment	0.113	0.107	0.127	0.072	1.000
Personal and Psychological Empowerment	0.121	0.116	0.138	0.061	1.000
Relational Empowerment	0.108	0.102	0.121	0.079	1.000

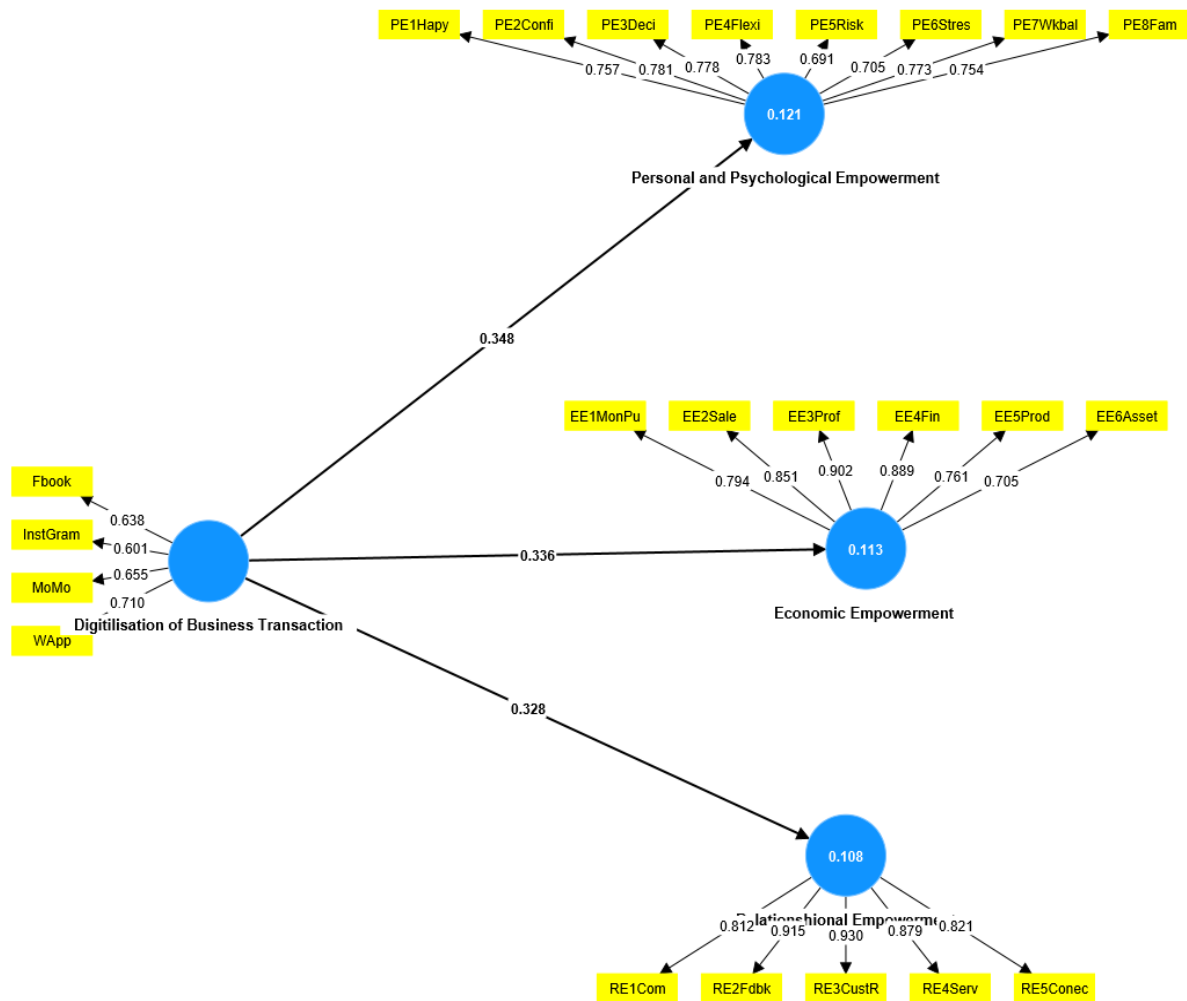


Figure 1: Structural Path Model

Hypotheses Testing

To test the hypothesised relationships, a bootstrapping procedure with 5000 re-samples was performed. The bootstrapping procedure was further done to confirm whether the study's hypothesised relationships were supported or rejected. Although researchers recommend the control of demographic variables such as age and business size, initial assessment largely resulted in insignificant effects. The results from Table 4 shows that the hypothesised relationships (H1-H3) were supported.

Specifically, the results show that digitalisation of business transactions has a significant positive effect on economic empowerment of female entrepreneurs ($\beta=0.336$, $t= 5.664$, p -value= 0.000). This could be attributed to agency in terms of the ability of the female entrepreneurs surveyed to make and implement strategic entrepreneurial decisions including investment in digitalising their operations. Tursunova (2014) and Boateng (2017) underscore

the facilitating role of agency in women's empowerment which, in this study, is manifest in the positive influence of digitalisation of business transactions on the economic empowerment of the entrepreneurs, in line with prior research by Buer et al. (2021) and Miniesy et al. (2021).

Table 4: Path Coefficient (Direct Effect)

Hyp.	Path	β	T-Statistics	P Values	Supported/Not Supported
H1	DBT -> EE	0.336	5.664	0.000	Supported
H2	DBT -> PE	0.348	6.320	0.000	Supported
H3	DBT -> RE	0.328	5.079	0.000	Supported

NB: *DBT= Digitalisation of business transactions, EE=economic empowerment, PE = Personal and Psychological Empowerment, RE= Relational Empowerment

The results further show that digitalisation of business transactions has a significant positive influence on the psychological empowerment ($\beta=0.348$, $t= 6.320$, $p\text{-value}= 0.000$) of the female entrepreneurs surveyed. As one of the less researched constructs (Miniesy et al., 2022), this study provides empirical evidence, showing the capacity of digitalisation of business operations to promote the psychological empowerment of female entrepreneurs. The findings confirm previous research by Alam et al. (2009) and Ye and Yang (2020).

Finally, the results prove that digitalisation of business transactions positively affects relational empowerment of female entrepreneurs in a significant manner ($\beta=0.328$, $t= 5.079$, $p\text{-value}= 0.000$). The digital platforms (e.g. WhatsApp and Facebook) that the female entrepreneurs use provide them with the opportunity to communicate and relate with others which empowers them to provide timely information and feedback to clients and other stakeholders. The results is akin to previous studies such as Ye and Yang (2020) and Miniesy et al. (2022). Theoretically the results support arguments by the liberal feminist theory that when women have access to the requisite resources, they tend develop the necessary capacity to perform.

Conclusion

The purpose of the study was to analyse the effects of digitalisation on the empowerment of female entrepreneurs. This study has provided empirical evidence in support of positively significant effects of digitalisation on the empowerment of female entrepreneurs in the execution of their economic activities. In addition, the study contributes to the emerging research field of digitalisation and empowerment by adding onto the critically limited number

of studies that addresses female entrepreneurs. The findings suggest that digitalisation is an important phenomenon for female entrepreneurship. As a result, female entrepreneurs should undergo orientation of the understanding, usage and effective management of digital platforms and services to have positive returns on their investments.

Similar to most cross-sectional studies, the data were largely limited to the University of Cape Coast entrepreneurial ecosystem and data collection was cross-sectional, hence limiting the ability to assess the causal relationship between the study's constructs. Further, this research does not allow for the generalisation of the results due to the sampling technique employed. It is recommended that future studies can focus on longitudinal design and use sampling techniques that allow for generalisation.

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APPENDIX

Digitalisation scale

		Less often-----Very often								
	Digital platforms & services	NO	YES	1	2	3	4	5	6	7
1.	Mobile money services									
2.	WhatsApp									
3.	Facebook									
4.	Instagram									
5.	Twitter									
6.	Jumia									
7.	Kikuu									
8.	Tonaton									
9.	Jiji									
10.	Hubtel									
	In the spaces below, please specify other platforms that you use and rate									
11.										
12.										
13.										

Female empowerment scale

		Least Extent-----High Extent						
		1	2	3	4	5	6	7
	Psychological empowerment: Through the use of the digital platforms & services, I ...							
1.	am happy about the performance of my business							
2.	am confident about my ability to grow the business							
3.	am able to make better decisions about my business							
4.	have developed the flexibility in the use of the platform(s)							
5.	am able to manage risk in digital fraud							
6.	am able to manage stress							
7.	am able to balance work and family							
8.	have improved the well-being of my family							

	Relational empowerment: Through the use of the digital platforms & services, I...						
1.	communicate often with my customers and others						
2.	give quick feedback to customers, etc.						
3.	have been able to improve my relationship with my customers, suppliers, etc.						
4.	serve my customers better						
5.	connect with new customers quicker						
6.	teach others on the use of the platform						
	Economic empowerment: Through the use of the digital platforms & services,						
1.	I am able to monitor my purchases better						
2.	I have increased my monthly sales						
3.	My profits have increased						
4.	My financial condition has improved						
5.	I have been able to add more products to my business						
6.	I have been able to acquire other business assets						