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ASSESSING THE INFLUENCE OF INFORMATION TECHNOLOGY ON FEMALE ENTREPRENEUR EMPOWERMENT IN INDONESIA: THE ROLE OF SOCIAL AND PSYCHOLOGICAL CAPITALS

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ABSTRACT

Background: Gender equality is crucial for Indonesia's sustainable development, given that women represent nearly half the population. Despite their significant economic contributions, Indonesian women face considerable challenges in entrepreneurship, largely due to gender disparities.
Purpose: This study examines how Information and Communication Technology (ICT), social capital, and psychological factors impact women's entrepreneurship empowerment in Indonesia.
Design/Methodology/Approach: Using survey data from 176 female MSME entrepreneurs and structural equation modeling, the study explores the relationships between ICT, social capital, psychological capital, and empowerment.
Findings/Results: ICT enhances both social and psychological capital, which in turn positively impacts women's entrepreneurship empowerment.
Conclusion: Integrating ICT, social capital, and psychological capital provides new insights into women's empowerment in developing economies. Recommendations include improving ICT infrastructure, social networking, and psychological support programs.
Originality/Value (State of the Art): The study offers a novel approach by linking ICT, social capital, and psychological capital to women's empowerment in entrepreneurship, particularly in a developing country context.

Keywords: empowerment, information and communication technology, psychological capital, social capital, women entrepreneurs

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INTRODUCTION

Aligned with the United Nations Sustainable Development Goals agenda for 2030, one of the key objectives among the 17 goals is gender equality and the empowerment of women and girls (United Nations, 2018). In Indonesia, gender equality remains a challenge. The Gender Development Index 2022 stood at 94.01%, indicating progress but still reflecting significant gender gaps, particularly in economic opportunities and entrepreneurship (Central Bureau of Statistics, 2022). These disparities are critical, as nearly 50% of Indonesia's population comprises women and gender inequality can lead to adverse outcomes such as poverty and limited access to education, healthcare, and financial resources (Dixit et al. 2023).

Women are pivotal to the growth of Micro, Small, and Medium Enterprises (MSMEs), which contributed 61% of Indonesia's economy in 2023 (Ministry of Finance, 2023). Despite Indonesia having the highest percentage of women entrepreneurs in Southeast Asia (Ministry of Communication and Information Technology, 2022), they face numerous challenges, particularly in accessing resources and support networks, as reflected in the low Gender Empowerment Index (GEI) (Dania, 2019).

This study seeks to investigate the role of Information and Communication Technology (ICT) in empowering women entrepreneurs in Indonesia. ICT has the potential to transform the socio-economic landscape by providing women with the tools to overcome barriers and enhance their entrepreneurial activities (Ajumobi & Kyobe, 2016). The research will explore how ICT adoption influences women's empowerment in entrepreneurship and how it interacts with other crucial factors such as social capital and psychological capital.

This research attempts to address the research directions proposed by Crittenden et al. (2019) that research on ICT and women's empowerment in other developing countries is needed, especially those involving micro-women entrepreneurs engaged in direct selling. Crittenden et al. (2019) also suggested using other mediating variables beyond self-efficacy; therefore, this study employs psychological capital, assuming that entrepreneurs skilled in ICT will have better psychological capital, which can serve as a bridge to enhance empowerment. Furthermore, this research also expands on the study by Digan et al. (2019), which only examined psychological capital and empowerment in the manufacturing sector.

Empowerment is the key to addressing gender equality, and it is recognized as a crucial issue worldwide (World Health Organization, 2018). Data from the Central Bureau of Statistics – Ministry of Women's Empowerment and Child Protection of the Republic of Indonesia (2022) shows that the informal sector, especially in rural areas, is dominated by women. Women aged 15 and above who work, with a percentage of 47.81%, are in the economic sector consisting of small-scale units producing and distributing goods and services to create job opportunities in urban areas, with 77.8% located in rural areas. The development of MSMEs is synonymous with the advancement of women in Indonesia. The role and contribution of MSMEs to the national economy reached 61.99%, with 57% managed by women. On the other hand, the role of women in the economic sector as entrepreneurs is considered to have a significant influence in Indonesia (Mashabi, 2020).

Empowerment through women's entrepreneurship holds significant value. First, women's empowerment in entrepreneurship focuses on economic barriers, such as limited resources or interventions to reduce resource constraints with microloans (Kivalya & Caballero-Montes, 2023). Second, political or social support is available for women entrepreneurs. Empowerment is recognized as a process that facilitates individuals with less power to identify problems, make decisions, and take action to gain control over their lives (Leahy-Warren & Nieuwenhuijze, 2023). Empowering women has shown results in reducing poverty (Wei et al. 2021), and it is also evident that self-employed individuals in micro areas significantly contribute to women's empowerment (Senapati & Ojha, 2019). Women's empowerment means allowing women to live socially and financially independently. Women's empowerment is a multidimensional concept encompassing various aspects such as involvement in education, freedom to make decisions, participation in the workforce, wages, and politics (Kivalya & Caballero-Montes, 2023).

Empowerment can be influenced by Information and Communication Technology (ICT). By utilizing ICT, women in developing countries can transform their social, political, and economic lives by reshaping processes that lead to opportunities for growth and development that have the potential to contribute to

socio-economic development (Ajumobi & Kyobe, 2016). Other research reinforces the argument that ICT benefits low-income countries more (Appiah-Otoo & Song, 2021). Moreover, a recent approach in ICT development focuses on removing time constraints and creating space for communication, thereby facilitating the growth of social networks (Zhao & Li et al. 2021).

In addition to ICT, social capital is also needed to facilitate women's empowerment. Social capital refers to the opportunities or benefits individuals gain due to their position and relationships within social structures (Burt & Burzynska, 2017). When social capital has a strong foundation, it significantly influences intellectual capital and provides positive value for empowerment (Prabawanti & Rusli, 2022). At the macro level, it refers to opportunities for individuals to engage in social activities (Moore & Kawachi, 2017), while at the micro level, in the context of MSMEs, it involves acquiring knowledge and resources through social relationships between business unit leaders, government institutions, financial institutions, and political leaders.

In developing countries, social capital has an impact that balances limited financial, human, natural, or physical capital resources (Rockenbauch et al. 2019). Indeed, social capital through benchmarking may improve women's empowerment in entrepreneurship (Dixit et al. 2023). Entrepreneurs are vital instruments because they connect innovation and the search for opportunities to ensure competitive advantages (Mazzei, 2018). On the other hand, preparing women entrepreneurs with the mental and emotional capabilities to address challenges related to entrepreneurship in the context of developing countries is also essential (Zivdar et al. 2017). This requires psychological capital.

Psychological capital is a personal resource with a positive value that can lead to individual and organizational success (Lupșa et al. 2020). Psychological capital has several positive qualities, such as creativity and proactivity. Both provide evidence that self-efficacy, hope, resilience, and optimism meet the inclusion criteria (Luthans & Youssef-Morgan, 2017). Entrepreneurs with high psychological capital will believe in their abilities, knowledge, and skills and channel them into creative actions to overcome challenges in their business (Baluku et al. 2016). Psychological capital can help business owners improve entrepreneurial performance (Grözinger et al. 2022; Esfandabadi et al. 2015). Other findings indicate that psychological capital influences empowerment (Haji et al. 2022).

The research aims to comprehensively examine several key aspects related to women's entrepreneurship empowerment in Indonesia. Firstly, the study seeks to investigate the influence of Information and Communication Technology (ICT) adoption on empowering women entrepreneurs. Secondly, the research aims to delve into the role of social capital in promoting women's entrepreneurship empowerment. Social capital encompasses the networks, relationships, and social connections that contribute to women's access to resources, information, and support within entrepreneurial contexts. Thirdly, the study aims to assess the impact of psychological capital on women's empowerment within the entrepreneurship landscape. Psychological capital refers to the individual's positive psychological resources such as self-efficacy, optimism, resilience, and hope, and the study will explore how these factors influence women's empowerment in entrepreneurship. Additionally, the research aims to analyze the interrelationships between ICT adoption, social capital, and psychological capital in shaping women's entrepreneurship empowerment. By understanding these complex dynamics, the study aims to provide insights into the integrated role of these factors in empowering women entrepreneurs. These aims collectively contribute to advancing knowledge on strategies to promote women's economic participation and empowerment in Indonesia's evolving entrepreneurial landscape.

METHODS

The research design employed in this study is quantitative research using a survey method. The population used for this research consists of female MSME entrepreneurs residing in Indonesia. The data collection process was conducted from July 17 to November 3, 2023, by distributing a questionnaire in the form of a Google Form to female MSME communities in Indonesia. The data used in this research are primary data obtained through the questionnaire distributed to all research subjects. The primary data obtained from respondents and their responses are related to several research variables: empowerment, information technology, social capital, and psychological capital.

The technique used for sampling in this study employs non-probability sampling. The sampling criteria for this research are as follows: female gender, minimum age of 17 years, ownership and operation of a business for at least one year, and business location in Indonesia. During the data collection phase, we received 193 responses from our research participants. However, upon review, we found that 17 of these responses did not meet the sampling criteria outlined for this study. Specifically, six respondents were not female entrepreneurs, and eleven respondents had not been operating their businesses for at least one year. Consequently, we were able to analyze data from a total of 176 respondents who met the specified criteria and could be included in our study.

The questionnaire used to measure Information and Communication Technology (ICT) was adapted from Crittenden et al. (2019), yielding a Cronbach's alpha of 0.79. An example item from this questionnaire is: "I feel that the interactions occurring in the application of ICT help me in direct sales clearly and understandably." The questionnaire utilized to assess psychological capital was drawn from the theory of Omar et al. (2014) and exhibiting a Cronbach's alpha of 0.90. A sample item from this questionnaire reads: "When faced with difficulties in my work, I can overcome them."

For the measurement of social capital, the questionnaire adopted in the study was based on Montiel-Campos et al. (2019), with a Cronbach's alpha of 0.82. An exemplar item from this questionnaire is: "I collaborate with customers, suppliers, and others to develop solutions." The empowerment questionnaire adopted in the study was derived from Crittenden et al. (2019) and demonstrated a reliability of 0.70. An illustrative item from this questionnaire is: "I have the freedom to make decisions about how I run my direct sales business." The survey in this study employs a Likert scale consisting of five ranges: strongly disagree, disagree, neutral, agree, and strongly agree.

Data analysis will be conducted using Structural Equation Modeling (SEM) techniques with the Partial Least Square (PLS) method through the SmartPLS version 4.0 program. This involves two primary analyses: the measurement model (outer model) and the structural model (inner model). In this study, SEM-PLS is preferred over multiple regression and factor analysis due to its ability to handle complex, multivariate relationships and latent variables. Unlike multiple regression, which is limited to examining the direct relationships between a single dependent variable and multiple independent variables, SEM-PLS enables the simultaneous analysis of multiple interrelated dependent and independent variables, making it ideal for evaluating the multifaceted impact of Information and Communication Technology (ICT), social capital, and psychological capital on women's empowerment.

The hypotheses of this study are as follows:
H_1: ICT influences social capital
H_2: ICT influences psychological capital
H_3: Social capital influences empowerment
H_4: Psychological capital influences empowerment
H_5: The relationship between ict and empowerment is mediated by social capital

The research framework, depicted in Figure 1, illustrates these relationships. Solid lines represent direct effects, while dashed lines represent indirect effects.

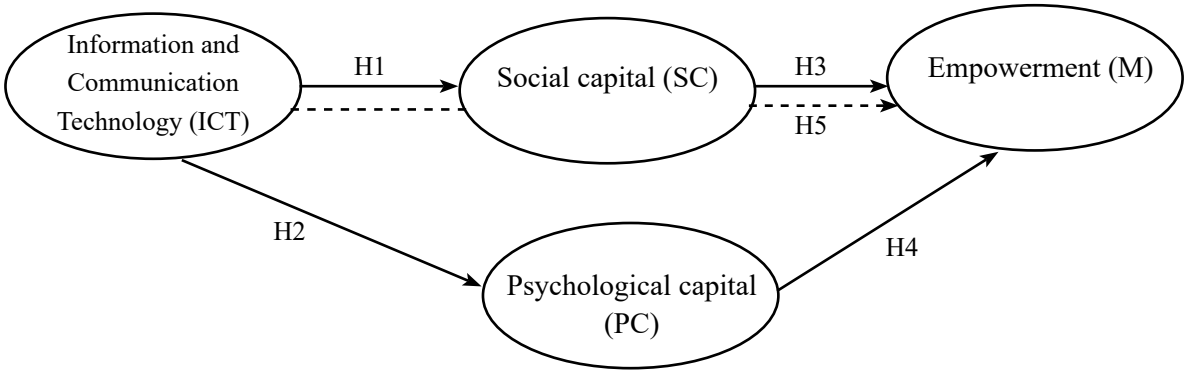

Figure 1. Research framework

RESULTS

In the measurement model test, two types of validity tests will be carried out: convergent validity and discriminant validity. Table 1 displays the results of the convergent validity test, indicating that all indicators are valid and can be utilized for further analysis in this study. An indicator is considered valid if it achieves a loading value >0.70. However, a loading factor >0.70 requirement is often not met. Thus, the loading factor values of 0.4–0.7 must still be considered (Hair et al. 2019). Moreover, it is noted that each variable in this study has an Average Variance Extracted (AVE) value greater than 0.5. Consequently, it can be stated that all variables in this study are valid and suitable for use in the next testing phase.

Table 1. Convergent Validity Results

Variable	Item	Loading Factor (>0,6)	AVE
Information and Communication Technology (ICT)	ICT1: ICT facilitates clear direct sales	0.785	0.643
	ICT2: Comfortable using ICT for sales	0.791	
	ICT3: Capable of applying ICT for sales	0.811	
	ICT4: ICT apps aid direct sales	0.716	
	ICT5: Dependent on ICT for sales	0.747	
	ICT6: ICT integral to daily sales	0.870	
	ICT7: ICT supports direct sales activities	0.888	
	ICT8: ICT for business issue communication	0.785	
	ICT9: ICT communicates with sales staff	0.797	
	ICT10: ICT communicates with sales customers	0.837	
	ICT11: ICT for socializing with sales communities	0.771	
	ICT12: ICT as learning tool for sales	0.811	
Social Capital (SC)	SC1: Identify and solve problems collaboratively	0.850	0.726
	SC2: Share information and learn from team	0.886	
	SC3: Collaborate with stakeholders	0.819	
Psychological Capital (PC)	PC1: Provide sales product information	0.711	0.567
	PC2: Tasks hoped to be completed	0.720	
	PC3: Expectation of work improvement	0.714	
	PC4: Important tasks at work	0.726	
	PC5: Projects for workplace change	0.706	
	PC6: Solve difficult work problems with effort	0.722	
	PC7: Achieve goals despite opposition	0.730	
	PC8: Handle significant work challenges	0.829	
	PC9: Manage unexpected work situations	0.782	
	PC10: Overcome workplace difficulties effectively	0.821	
	PC11: Maintain personal well-being at work	0.777	
	PC12: Overcome work challenges successfully	0.814	
	PC13: Strength to meet work demands	0.793	
	PC14: View projects positively	0.780	
	PC15: Expect success in new projects	0.707	
	PC16: Achieve most work goals	0.722	
	PC17: Simplify minor task difficulties	0.728	

Table 1. Convergent Validity Results (continue)

Variable	Item	Loading Factor (>0,6)	AVE
Empowerment (EM)	EM1: Effective in direct sales	0.729	0.612
	EM2: Skilled in direct sales tasks	0.846	
	EM3: Confident in mentoring female salespeople	0.740	
	EM4: Authority in direct sales decisions	0.868	
	EM5: Freedom in managing direct sales	0.782	
	EM6: Inspired by others' sales achievements	0.720	
	EM7: Significant impact in direct sales business	0.735	
	EM8: Influence on other women in sales	0.811	
	EM9: Full control over direct sales outcomes	0.796	

The results of the discriminant validity test show that each indicator is valid because it has a higher cross-loading value than other constructs, indicating that the measurement items in this study are valid. The results of the discriminant validity test can be seen in Table 2.

The final stage in testing the outer model is the reliability test. The reliability test for variables measures indicators' capability to measure their latent variables (Hair et al. 2019). There are two methods to test the reliability of variables: by looking at the composite reliability values and Cronbach's Alpha. Generally, reliability below 0.60 is considered weak, while a range around 0.70 is acceptable, and above 0.80 is good (Hair et al. 2019). Table 3 shows each variable's composite reliability, and Cronbach's Alpha values are > 0.70. Therefore, they are acceptable, and this research can be considered reliable.

Hypothesis testing was conducted using the bootstrapping method to generate t-statistic values used to test each hypothesis. This study employed a confidence level of 95%, meaning the t-table value is 1.96. If the t-statistic value generated > the t-table value of 1.96 and the p-values < 0.05, then the hypothesis is accepted; conversely, if the t-statistic value is < 1.96 and the p-values are > 0.05, then the hypothesis is rejected (Hair et al. 2019). The results of hypothesis testing from this study can be seen in Table 4. Figure 2 shows the results of the inner model test.

The study's findings underscore the significant role of Information and Communication Technology (ICT) in influencing social capital, psychological capital, and empowerment among women entrepreneurs in Indonesia. This aligns with the theoretical framework that posits ICT as a critical enabler of social and psychological resources, which are essential for entrepreneurial success.

This study's findings align with Nawinna & Venable's (2019) research, which highlights that ICT significantly impacts social capital dimensions. In the Indonesian context, the role of ICT in overcoming interaction difficulties is particularly significant due to the country's diverse and geographically dispersed population. Unlike in more technologically advanced countries, Indonesian women entrepreneurs face unique challenges such as limited access to reliable internet and varying levels of digital literacy. This contrasts with the more seamless ICT integration observed in developed nations, where entrepreneurs may experience fewer barriers to technology adoption. Despite these challenges, ICT in Indonesia facilitates efficient communication and knowledge sharing, which is crucial for overcoming local constraints and fostering innovation (Mazzucchelli et al. 2019). The development of ICT provides an avenue for Indonesian women entrepreneurs to enhance their social capital and well-being, enabling them to stay connected with peers and customers despite logistical challenges. These technologies also improve their confidence, self-efficacy, and resilience (Yudiastuti et al. 2021).

Table 2. Discriminant validity results

Item	Cross Loading Values			
	ICT	SC	PC	EM
ICT1	0.785	0.471	0.491	0.492
ICT2	0.791	0.521	0.443	0.417
ICT3	0.811	0.488	0.571	0.443
ICT4	0.716	0.451	0.444	0.470
ICT5	0.747	0.358	0.482	0.424
ICT6	0.870	0.527	0.582	0.519
ICT7	0.888	0.566	0.592	0.520
ICT8	0.785	0.428	0.562	0.436
ICT9	0.797	0.410	0.463	0.374
ICT10	0.837	0.567	0.622	0.583
ICT11	0.771	0.454	0.555	0.433
ICT12	0.811	0.531	0.605	0.499
SC1	0.508	0.850	0.622	0.585
SC2	0.558	0.886	0.636	0.581
SC3	0.476	0.819	0.526	0.515
PC1	0.393	0.401	0.711	0.485
PC2	0.579	0.523	0.720	0.520
PC3	0.544	0.509	0.714	0.544
PC4	0.369	0.454	0.726	0.494
PC5	0.556	0.515	0.706	0.486
PC6	0.483	0.570	0.722	0.617
PC7	0.489	0.574	0.730	0.583
PC8	0.556	0.587	0.829	0.626
PC9	0.512	0.532	0.782	0.575
PC10	0.476	0.532	0.821	0.585
PC11	0.505	0.531	0.777	0.597
PC12	0.494	0.511	0.814	0.603
PC13	0.565	0.529	0.793	0.604
PC14	0.565	0.575	0.780	0.673
PC15	0.482	0.596	0.707	0.550
PC16	0.505	0.514	0.722	0.607
PC17	0.466	0.469	0.728	0.531
EM1	0.450	0.461	0.477	0.729
EM2	0.505	0.615	0.688	0.846
EM3	0.435	0.412	0.532	0.740
EM4	0.532	0.600	0.687	0.868
EM5	0.438	0.539	0.680	0.782
EM6	0.393	0.501	0.502	0.720
EM7	0.417	0.474	0.492	0.735
EM8	0.461	0.509	0.607	0.811
EM9	0.488	0.492	0.623	0.796

Table 3. Reliability Test Results

Variable	Composite Reliability	Cronbach's Alpha
Information and Communication Technology (ICT)	0.956	0.949
Social Capital (SC)	0.888	0.811
Psychological Capital (PC)	0.957	0.952
Empowerment (EM)	0.934	0.920

Table 4. Hypotheses Test Results

	Hypotheses	Path Coefficient	T-statistic	P-value	Result
H1	ICT → SC	0.605	11.510	0.000	Accepted
H2	ICT → PC	0.672	15.429	0.000	Accepted
H3	SC → EM	0.248	3.144	0.002	Accepted
H4	PC → EM	0.587	8.406	0.000	Accepted
H5	ICT → SC → EM	0.150	2.891	0.004	Accepted

Note: Information and Communication Technology (ICT); Social Capital (SC); Psychological Capital (PC); Empowerment (EM)

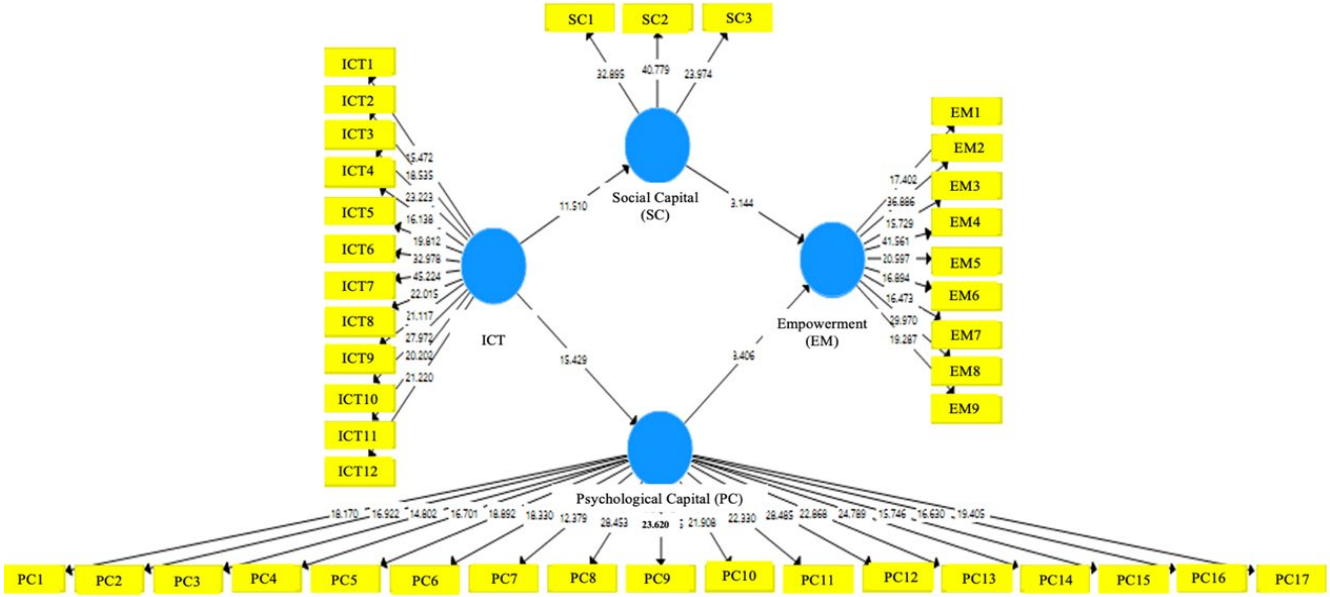

Figure 2. Inner model results

Furthermore, Smith et al. (2017) found that computer-mediated communication aids in building both bridging and bonding social capital. For Indonesian women entrepreneurs, ICT offers a platform to connect with a broader network of peers and potential customers, which is particularly valuable in a country with significant regional disparities. This contrasts with experiences in developed countries, where women entrepreneurs may benefit from more robust ICT infrastructure and support systems. Crittenden et al. (2019) emphasized that ICT, including mobile devices and social media, facilitates networking and business promotion. In Indonesia, where traditional business practices are prevalent, the adoption of ICT represents a significant shift towards modern communication methods, bridging the gap between traditional and contemporary practices. This shift is often more pronounced in Indonesia compared to other countries where digital transformation may be more advanced.

The study's results also indicate that ICT influences psychological capital, a finding consistent with Davidson and Joinson's (2021) conclusions. Social media, a prevalent ICT tool in Indonesia, significantly impacts psychological capital by providing multiple communication channels. Indonesian women entrepreneurs, who often have to navigate complex social and economic environments, find that social media enhances their hope, efficacy, resilience, and optimism (Brown et al. 2022; Sánchez-Fernández &

Jiménez-Castillo, 2021). For example, social media visibility can boost hope and optimism by showcasing business successes and attracting positive feedback, while also testing resilience in the face of criticism.

The findings support Avelino et al.'s (2022) assertion that social capital influences empowerment. In Indonesia, where social networks play a crucial role in business success, the social capital derived from ICT use can significantly enhance women's economic and social empowerment (Ul Hammed et al. 2018; Usman & Ahmad, 2018). The social relationships formed through ICT provide both economic opportunities and social support, crucial for women entrepreneurs in a developing country context. Atmadja et al. (2016) found that social capital is an answer to the success of micro-women-owned enterprises and is considered to have a positive value for developing women-owned enterprises. Crittenden et al. (2019) found that social capital has the highest influence on the empowerment variable, particularly in goal internalization. Goal internalization focuses on the direct sales organization's goals and achievements within the organization.

This study also corroborates Digan et al.'s (2019) findings on the positive impact of psychological capital on empowerment. In the Indonesian context, where entrepreneurial challenges are often intensified by socio-economic factors, psychological capital helps women entrepreneurs to overcome obstacles and achieve success (Lorenz et al. 2016; Joo et al. 2016). The ability to manage stress, maintain optimism, and adapt to changing circumstances is vital in navigating the unique challenges faced by Indonesian women entrepreneurs.

Moreover, Crittenden et al. (2019) highlight that efficacy positively influences empowerment, which is crucial in the Indonesian context where self-confidence and perseverance are essential for overcoming barriers in a developing economy. Psychological capital equips Indonesian women entrepreneurs with the resilience and determination needed to navigate their complex business environments. Digan et al. (2019) also found that psychological capital equips entrepreneurs to overcome many mental and emotional challenges associated with the entrepreneurial process.

ICT serves as a critical mediator between social capital and women's empowerment, particularly in business sustainability. In Indonesia, where social and economic conditions are rapidly evolving, ICT provides a significant advantage by connecting women to broader networks and opportunities (Ahmed, 2018; Gil et al. 2020). Social media, in particular, facilitates business growth by enabling Indonesian women entrepreneurs to build social relationships, access new markets, and promote their products effectively (Ngoa & Song, 2021). The integration of ICT into their business practices represents a significant shift towards more sustainable and inclusive entrepreneurial practices.

In this context, social capital comprising the network of social relationships built by women entrepreneurs plays a crucial role. Indonesian women entrepreneurs with robust social capital often experience higher levels of empowerment (Avelino et al. 2022). The establishment of social relationships with other entrepreneurs and customers enhances their business competencies and capabilities. In Indonesia, where regional diversity and varying levels of infrastructure can impact business operations, the information and support obtained through these networks are vital. They help women entrepreneurs navigate local challenges and leverage opportunities, thereby controlling and achieving their business goals more effectively. Consequently, social capital is integral to understanding how ICT utilization influences women's empowerment in the Indonesian business landscape, as it facilitates access to critical resources and knowledge essential for entrepreneurial success.

Managerial Implications

The research highlights key managerial implications for empowering women through the strategic use of ICT. First, investing in ICT infrastructure and platforms that facilitate networking and collaboration among women entrepreneurs is crucial. Policymakers should focus on developing digital platforms that enable women to connect, share knowledge, and access resources, thereby enhancing their social capital. Second, ICT plays a significant role in shaping the psychological capital of women entrepreneurs. Managers should provide training programs and resources to build positive psychological attributes such as self-efficacy, optimism, and resilience, helping women navigate challenges and pursue their entrepreneurial goals

with confidence. Third, recognizing the mediating role of social capital in the ICT-empowerment relationship underscores the need to foster supportive social networks within entrepreneurial ecosystems. Policymakers should facilitate opportunities for women entrepreneurs to build and leverage social capital through networking events, mentorship programs, and community initiatives. Integrating these managerial implications into entrepreneurship support programs can create an environment that empowers women to thrive in the digital economy.

CONCLUSION AND RECOMMENDATIONS

Conclusions

This study provides a nuanced understanding of the interplay between Information and Communication Technology (ICT), social capital, psychological capital, and women's empowerment within the Indonesian entrepreneurial context. Our findings align with and extend existing literature by demonstrating the pivotal role of ICT in enhancing women entrepreneurs' social and psychological resources. This supports the conclusions of Smith et al. (2017) and Crittenden et al. (2019), who highlighted ICT's role in facilitating networking and market access. Additionally, our research corroborates the importance of social capital in mediating the relationship between ICT and empowerment, as discussed by Avelino et al. (2022) and Usman & Ahmad (2018).

Theoretical contributions of this study include advancing the understanding of how ICT influences psychological capital through social media and other digital platforms. Our findings reinforce the theoretical frameworks proposed by Sánchez-Fernández & Jiménez-Castillo (2021) and Digan et al. (2019), which emphasize the dimensions of psychological capital hope, efficacy, resilience, and optimism in shaping entrepreneurial outcomes. This integration of ICT into psychological capital development offers new insights into how technological advancements can enhance individual and collective empowerment.

Recommendations

Future research should explore additional variables affecting women's empowerment, such as motivation and family support, to gain a deeper understanding of the empowerment process. Investigating specific business sectors or MSMEs could also reveal new insights into women's entrepreneurship. It is also important to examine ICT adoption's impact on women's empowerment across different cultural and socio-economic contexts. Understanding how ICT-mediated interactions and digital platforms can be leveraged in diverse settings is essential for promoting inclusive development. Future studies should assess targeted interventions and policies to improve women's access to ICT resources and address the digital gender divide, contributing to more effective and gender-responsive strategies.

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