

Digital Entrepreneurship Model: Optimizing Internal and External Support for Female Entrepreneurs

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Abstract

Female entrepreneurs experienced a decline in performance during the COVID-19 pandemic. To overcome the impact of this pandemic, entrepreneurs are adopting digital technology. However, female entrepreneurs continue to face obstacles both internal (family, finance, knowledge) and external (community, business partners, government). This research aims to determine the factors that can influence the performance of women entrepreneurs, especially the role of digital technology adoption as a moderating variable between the relationship between internal and external support and the level of entrepreneurship. This research was conducted in the Jember Regency. The respondents are female entrepreneurs who have adopted digital technology. This research uses a quantitative approach with a survey method. Data analysis using PLS-SEM analysis. The results showed that internal and external support positively and significantly influenced the level of entrepreneurship. The interaction between digital technology adoption and external support on the level of entrepreneurship is positive and significant, while the interaction between digital technology adoption and internal support on the level of entrepreneurship is positive but not significant. The level of entrepreneurship has a positive and significant effect on the performance of female entrepreneurs.

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1. Introduction

During the COVID-19 pandemic, businesses owned by females experienced a 44% decline in sales where the average Gross Merchandise Value (GMV) of female entrepreneurs decreased from 164% before the pandemic from male GMV to 120% during the pandemic. In Indonesia, females only accounted for 36% of the total GMV during the pandemic (IFC, 2021). The COVID-19 pandemic has accelerated growth in the digital sector due to the shift in the way of shopping from face-to-face to online. Currently, the performance of SMEs is related to digital technology adoption to develop business sustainability. Digital technology adoption by entrepreneurs is mostly found in developed countries. However, there is a lot of uncertainty with entrepreneurs in developing countries. Therefore, entrepreneurs in developing countries need to adopt digital technology (Abed, 2021). These advances in digitalization do not automatically translate into progress in gender equality. Female entrepreneurs continue to face a maelstrom of multitasking, conflicts between work and personal life, a lack of funding and support services, a lack of marketing and management skills, insufficient access to information, business networks, technology, and digital markets (Kamberidou, 2020).

Previous research has identified the effect of internal support (family, finance, knowledge) on the level of entrepreneurship which is generally positive (Adachi & Hisada, 2017; Bi et al., 2017; Omiunu, 2019; Al-Kwifit et al., 2020; Oggero et al., 2020; Soluk et al., 2021). Several studies have also confirmed the positive effect of external support (community, business partners, government) on the level of entrepreneurship (Bi et al., 2017; Al-Kwifit et al., 2020; Soluk et al., 2021). However, some of these effects have not been tested empirically within the scope of female entrepreneurs. This research fills a gap that exists in this context. The literature on female entrepreneurship is expanding quickly, and most of it focuses on the obstacles females face when starting and operating firms. These obstacles include a lack of access to information, capital, and networks. However little is understood about how digital technology influences changes in female entrepreneurship (Ughetto et al., 2020).

This research understands the causality between digital technology and entrepreneurship, known as digital entrepreneurship. This type of digital entrepreneurship has become popular for businesses in developing countries (Gibreel et al., 2018). In these countries, various patriarchal, social, and cultural gender-based institutional barriers have limited female economic development (Hein et al., 2016). These limitations make females look for alternatives to build a digital business. Digital business is a tool that has the potential to facilitate female inclusion and economic empowerment (Oreglia & Srinivasan, 2016). The specific aim of this research is to look for digital entrepreneurship models for female entrepreneurs. To achieve this, several research questions will be studied further as follows. First, does internal and external support affect the level of entrepreneurship in female entrepreneurs? Second, is the relationship affected by digital technology adoption? Third, will the level of entrepreneurship ultimately affect the performance of female entrepreneurs?



2. Literature Review

Dynamic Capabilities

This research consists of variables of internal support (family, finance, knowledge), external support (community, business partners, government), digital technology adoption, level of entrepreneurship, and business performance. These variables are based on the grand theory of strategic management. This research uses the Dynamic Capabilities Theory approach (Teece, 2009). Dynamic capabilities concentrate on how a company's resources and capabilities need to be changed or updated over a sometime to maintain their relevance in a changing market.

Digital Entrepreneurship

This research uses a digital entrepreneurship concept approach. According to (Nambisan, 2017), digital entrepreneurship is more similar to the information systems idea of information artifacts, platforms, and infrastructure. Many times, digital entrepreneurs are primarily interested in the services that are built on the technology that underpins their business idea. Technology is merely an input factor in this situation. Digital technology entrepreneurship, on the other hand, describes technology where the final result is technology. Several studies have been conducted concerning business performance variables, level of entrepreneurship, digital technology adoption, internal support (family, finance, knowledge), and external support (community, business partners, government). In the following, several studies related to these variables are presented.

Business Performance

Performance is defined as an action's efficiency and/or effectiveness (Bititci, 2015). The amount of resources needed by activities to create outcomes or outputs is referred to as efficiency. Effectiveness is the degree to which the outcomes of a course of activity satisfy our needs, specifications, or expectations. Financial and non-financial performance are the two main components of performance measurement. The internal and external environments of a company can both be used to measure performance. By previous research (Feranita et al., 2017; Feranita et al., 2019; Feranita et al., 2020), this research defines business performance in terms of market share, sales, and profits.

Level of Entrepreneurship

Entrepreneurship is the process of combining original and creative thought with the requisite managerial and organizational abilities to mobilize resources to meet a known need and generate profit in the process (Pearce II & Robinson Jr., 2019). The three key components of the entrepreneurial process for starting and maintaining new businesses can be efficiently managed by growth-oriented start-ups and small business owners. They are resources, an entrepreneurial team, and opportunity.

Digital Technology Adoption

Digital technology adoption is defined as the use of business-related computer-based solutions such as smartphone applications (Urbinati et al., 2018). No matter the age, size, location, or industry of a company, adopting digital technologies is



becoming more and more crucial (Bharadwaj et al., 2013). Pergelova et al. (2019) operationalize digital technology through three distinct steps: (1) the use of digital infrastructure; (2) the use of information management systems; and (3) the frequency of using the internet for work purposes. Digital technology adoption can benefit companies in several ways. Technology adoption can help SME owners keep up with the pace of multinational corporations as it can increase their reach and improve overall performance (Kumar et al., 2021). The performance of SMEs is improved through the usage of technology (Chege et al., 2020; Wielgos et al., 2021). Technology resources and alignment contribute significantly to SMEs' performance both directly and indirectly through the development of e-business capabilities and business process competencies (Bi et al., 2017).

Family Support

Business in the developing world, which is known for its strong culture and family ties, depends on family. In developing countries, the level of entrepreneurship is positively correlated with the extent of family support for microenterprises. The implementation of digital technology strengthens the link between family support and entrepreneurship in micro businesses (Soluk et al., 2021). The family has an additional positive effect on female entrepreneurship (Adachi & Hisada, 2017). One of the main strategies used by females to gain family support is to tell stories about their day-to-day successes (McAdam et al., 2020).

Financial Support

Access to finance is a barrier faced by female entrepreneurs (Poggesi et al., 2016). Therefore, providing access to financial support will increase the level of entrepreneurship among female entrepreneurs (Al-Kwifit et al., 2020). The higher a person's financial literacy, the higher the possibility of becoming an entrepreneur. Digital skills strengthen the link between financial literacy and the fact of being an entrepreneur (Oggero et al., 2020).

Knowledge Support

Knowledge of business is the most influential factor motivating entrepreneurs to set up their own businesses. This knowledge includes knowledge of the Internet, moderate digital literacy skills, and has used the Internet via smartphones and tablets to browse Facebook and WhatsApp (Hamid et al., 2020). The level of female entrepreneurship is positively related to increased knowledge (Al-Kwifit et al., 2020). Pergelova et al., (2019) stated that digital technology has the potential to democratize entrepreneurship by providing access to international market knowledge and facilitating interactions with customers and partners. Knowledge of technology has a significant effect on the relationship between technology adoption and the performance of female-owned SMEs (Omiunu, 2019).

Community Support

In line with the statement above regarding family support, through close interaction with local actors, community support can have a major influence on SME activities, especially in developing countries. The extent to which the community supports microbusinesses in developing countries is positively related to the level of entrepreneurship. The implementation of digital technology strengthens the link



between community support and entrepreneurship in micro businesses (Soluk et al., 2021). Females are beginning businesses more frequently through digital mediation (communication mediated by digital devices such as networked computers and cellphones), using social media platforms to create online communities and market products for females (Steel, 2021).

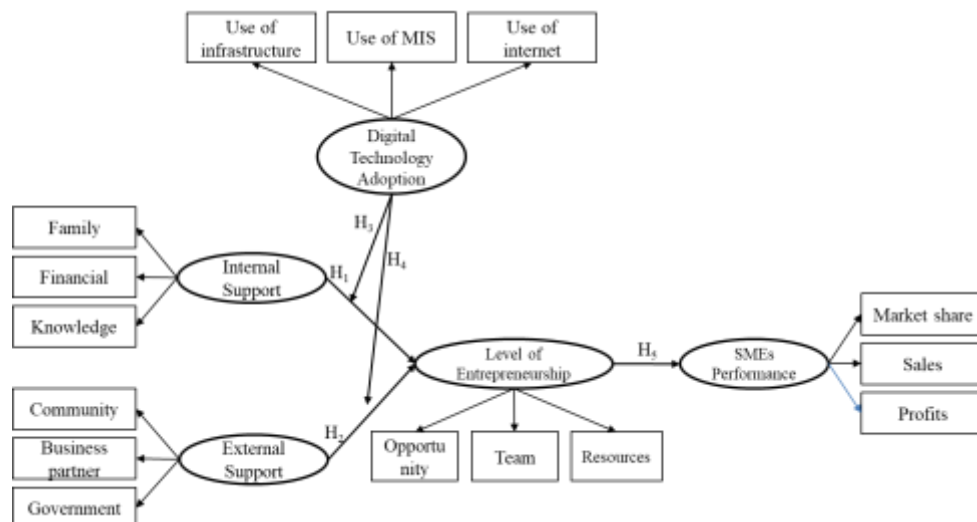
Business Partner Support

Business partners, such as customers or suppliers, may convey observations and ideas for product and service improvements that can help the company focus entrepreneurially. In developing countries, the level of entrepreneurship is correlated with the level of business partner assistance for microenterprises (Soluk et al., 2021; Bi et al., 2017). Some female entrepreneurs have developed a global network of connections through business partners that enables them to source foreign goods for online sales. The expansion of their market and sale of their goods to a global market benefits other female entrepreneurs (Steel, 2021).

Government Support

The level of female entrepreneurship is positively related to the support structure in the form of assistance from the government (Al-Kwafi et al., 2020; Hansen, 2019). Governments committed to promoting the expansion and development of small businesses run by females should fund and sponsor the workshops and training necessary to improve the e-literacy and technical skills of such businesses as well as their adoption of technology for improved performance (Omiunu, 2019). Government policies should aim to improve technology infrastructure, promote SMEs' technology externalities in the industry, and build technology resource centers to support SMEs' performance (Chege et al., 2020).

This research is needed to analyze the role that digitalization plays in the entrepreneurial ecosystem from a gender perspective. Figure 1 shows the research framework and hypotheses based on the literature review.



Source: Author, 2023

Figure 1. Research Conceptual Framework



The research hypotheses are as follows

- H₁ : Internal support influences the level of entrepreneurship in female entrepreneurs.
- H₂ : External support influences the level of entrepreneurship in female entrepreneurs.
- H₃ : The effect of internal support on the level of entrepreneurship is strengthened by digital technology adoption for female entrepreneurs.
- H₄ : The effect of external support on the level of entrepreneurship is strengthened by digital technology adoption for female entrepreneurs.
- H₅ : The level of entrepreneurship influences the performance of female entrepreneurs.

3. Research Methods

This research uses a survey method with a quantitative approach. The population is female entrepreneurs in the Jember Regency who have adopted digital technology in their business processes. This research uses a snowball sampling technique in taking the sample. Questionnaires were distributed to respondents online via the Google form link from July to September 2022 so 117 respondents were obtained. This research uses Partial Least Square-Structural Equation Modeling (PLS-SEM) analysis with SmartPLS 4.0 software for hypothesis testing purposes. The research questionnaire uses a 5-point Likert scale adapted from the appropriate literature. For internal support and external support variables, variable measurements were adapted from the questionnaire developed by Soluk et al. (2021) and Al-Kwifit et al. (2020). The internal support variable consists of three indicators, namely family support, financial support, and knowledge support. The external support variable consists of three indicators, namely community support, business partner support, and government support. For digital technology adoption variables, variable measurements were adapted from the questionnaire developed by Pergelova et al. (2019). The digital technology adoption variable consists of three indicators, namely use of infrastructure, use of Management Information Systems (MIS), and use of the internet. The measurement of the level of entrepreneurship variable is taken from Pearce II & Robinson Jr. (2019) which consists of three indicators, namely opportunity, team, and resources. For business performance variables, variable measurements were adapted from the questionnaire developed by Feranita et al. (2017), Feranita et al. (2019), and Feranita et al. (2020). Business performance variables consist of three indicators, namely market share, sales, and profits.

The results of the instrument validity and reliability tests on the variables of internal support, external support, digital technology adoption, entrepreneurial level, and business performance can be seen in Table 1. All statement items have significant correlation values because p value $< \alpha$ (0.05) so it is stated as valid. The Cronbach alpha coefficient value is > 0.70 so that all research variable instruments are declared reliable.



Table 1. Validity and Reliability Test Results

Variables and Indicators		Cronbach Alpha	Correlation
Internal Support		0.942	
	Family		
	• Accept new ideas from family members		0.772
	• Accept feedback from family members		0.792
	• Accept emotional support from family members		0.859
	Financial		
	• Obtain capital from their own savings		0.847
	• Obtain capital from family assistance		0.886
	• Obtain capital from bank loans		0.812
	Knowledge		
	• Have a supportive educational background		0.832
	• Have special skills		0.812
	• Have adequate experience		0.872
External Support		0.907	
	Community		
	• Willing to share experience and knowledge		0.746
	• Engage in new product trials and provide feedback		0.806
	• Serves as a provider of financial resources		0.635
	Business partner		
	• Consumers provide information		0.825
	• Obtain information from suppliers		0.724
	• Interaction with competitors to exchange knowledge		0.773
	Government		
	• Accept support in financial support		0.746
	• Accept support in business training		0.757
	• Accept support in digital product marketing		0.865
Digital Technology Adoption		0.937	
	Use of Infrastructure		
	• Marketing and selling products through e-commerce		0.841
	• Providing an online ordering and payment system		0.891
	Use of Management Information Systems (MIS)		
	• Consumers obtain information related to products sold through e-commerce accounts		0.859
	• Female entrepreneurs obtain supplier-related information through e-commerce accounts		0.876
	Use of Internet		
	• Using the internet as a digital tool in all business processes		0.926
	• Internet creates added value		0.849
Level of Entrepreneurship		0.750	
	Opportunity		
	• Able to read market opportunities that arise		0.846
	Team		
	• Have a competent and expert team		0.813



Variables and Indicators		Cronbach Alpha	Correlation
	Resources		
•	Have the resources for business success		0.803
SMEs Performance		0.928	
	Market Share		
•	Has a better market share than its competitors		0.966
	Sales		
•	Has better sales than its competitors		0.921
	Profits		
•	Has better profits than its competitors		0.928

Source: Processed Data (2022)

4. Results

Based on the questionnaire data obtained from 117 respondents, several conclusions were obtained regarding the general description of the respondents. First, the most business sectors are the culinary sector (food/beverage) and fashion (62.4%). Second, the majority of respondents are married (58.1%). Third, the age of the majority of respondents is in the age range of 21-30 years (61.5%). Fourth, most of the respondents' recent education was dominated by high school/vocational high school graduates and undergraduates (S-1) of 88.1%. Fifth, the duration of running a business for most respondents is ≤ 3 years (65.8%). Sixth, the largest number of respondents, namely 1-4 people (94%). In this research, hypothesis testing used the PLS-SEM analysis technique with the SmartPLS 4.0 program. The measurement of the suitability of the PLS-SEM model consists of evaluating the outer model and inner model.

Outer Model Evaluation

To test construct validity using convergent validity and discriminant validity tests. The results of the convergent validity test using the outer loading value show that each research variable indicator has an outer loading value > 0.7 (Table 2) so all indicators are declared valid for research use and can be used for further analysis.

Table 2. Outer Loading

Variable	Indicator	Outer Loading
Internal Support (X_1)	$X_{1.1}$	0.765
	$X_{1.2}$	0.833
	$X_{1.3}$	0.792
External Support (X_2)	$X_{2.1}$	0.903
	$X_{2.2}$	0.849
	$X_{2.3}$	0.711
Digital Technology Adoption (Z_1)	$Z_{1.1}$	0.850
	$Z_{1.2}$	0.735
	$Z_{1.3}$	0.845
Level of Entrepreneurship (Y_1)	$Y_{1.1}$	0.728
	$Y_{1.2}$	0.852



Variable	Indicator	Outer Loading
SMEs Performance (Y ₂)	Y _{1.3}	0.863
	Y _{2.1}	0.913
	Y _{2.2}	0.935
	Y _{2.3}	0.902

Source: Processed Data (2022)

The discriminant validity test uses the cross-loading value. The results show that each indicator on the research variables has the largest cross-loading value on the variable it forms compared to the cross-loading values on the other variables (Table 3) so the indicators used in this research already have good discriminant validity.

Table 3. Cross Loading

Indicator	Variable				
	Internal Support	External Support	Digital Technology Adoption	Level of Entrepreneurship	SMEs Performance
X _{1.1}	0.765	0.382	0.178	0.368	0.307
X _{1.2}	0.833	0.384	0.129	0.396	0.301
X _{1.3}	0.792	0.504	0.316	0.435	0.451
X _{2.1}	0.444	0.903	0.209	0.413	0.475
X _{2.2}	0.485	0.849	0.405	0.495	0.447
X _{2.3}	0.388	0.711	0.079	0.292	0.478
Z _{1.1}	0.208	0.184	0.850	0.334	0.235
Z _{1.2}	0.239	0.381	0.735	0.363	0.315
Z _{1.3}	0.199	0.182	0.845	0.369	0.229
Y _{1.1}	0.371	0.273	0.526	0.728	0.360
Y _{1.2}	0.381	0.495	0.258	0.852	0.536
Y _{1.3}	0.477	0.441	0.324	0.863	0.559
Y _{2.1}	0.427	0.493	0.315	0.586	0.913
Y _{2.2}	0.385	0.467	0.244	0.560	0.935
Y _{2.3}	0.423	0.579	0.329	0.503	0.902

Source: Processed Data (2022)

Apart from observing the cross-loading value, discriminant validity can also be determined by looking at the Average Variant Extracted (AVE) value for each indicator. The AVE value of each variable is > 0.5 so it can be stated that each variable has good discriminant validity. Table 4 shows the AVE value as well as the composite reliability and Cronbach alpha values.



Table 4. AVE, Composite Reliability and Cronbach Alpha

Variable	AVE	Composite Reliability	Cronbach Alpha
Internal Support	0.635	0.716	0.713
External Support	0.681	0.812	0.769
Digital Technology Adoption	0.659	0.737	0.738
Level of Entrepreneurship	0.667	0.762	0.748
SMEs Performance	0.840	0.910	0.905

Source: Processed Data (2022)

To test the reliability of constructs using composite reliability and Cronbach alpha. Table 4 shows that all research variables have a composite reliability value of > 0.6 and a Cronbach alpha value of > 0.7 so it can be concluded that all variables have a high level of reliability.

Evaluasi Inner Model

This section will explain the results of the goodness of fit test, path coefficient test, and hypothesis testing. The goodness of fit assessment is known from the Q-Square value. The calculation results obtained a Q-Square value of 0.628. This shows the magnitude of the diversity of the research data that can be explained by the research model is 62.8%. While the remaining 37.2% is explained by other factors that are outside this research model. Thus, this research model can be stated to have good goodness of fit. The results of the path coefficient test and hypothesis testing are presented in Table 5.

Table 5. Path Coefficient Test and Hypothesis Test

Hypothesis	Model	Path Coefficient	P-Values
H ₁	Internal Support → Level of Entrepreneurship	0.282	0.001*
H ₂	External Support → Level of Entrepreneurship	0.268	0.002*
H ₃	Digital Technology Adoption* Internal Support → Level of Entrepreneurship	0.077	0.357
H ₄	Digital Technology Adoption* External Support → Level of Entrepreneurship	0.194	0.070**
H ₅	Level of Entrepreneurship → SMEs Performance	0.602	0.000*

Source: Processed Data (2022)

Note: * and ** are significant at the 5% and 10% level, respectively

The results of hypothesis testing show that four hypotheses have a significant effect and one hypothesis has an insignificant effect. Thus, hypotheses 1, 2, 4, and 5 are accepted. While hypothesis 3 is rejected.



Discussion

The results of the research show that hypothesis 1 (H_1), which states that internal support influences the level of entrepreneurship among female entrepreneurs, is accepted. This research found that internal support has a positive and significant effect on the level of entrepreneurship. It can be interpreted that the better the internal support, the higher the entrepreneurial level of female entrepreneurs. These results provide evidence that internal support consisting of indicators of family support, financial support, and knowledge support will have a significant effect on the level of entrepreneurship. From an empirical perspective, the results of this research are in line with the results of previous studies examining the effect of internal support on the level of entrepreneurship. The results of previous research indicate that internal support has a positive and significant effect on the level of entrepreneurship (Adachi & Hisada, 2017; Soluk *et al.*, 2021; McAdam *et al.*, 2020; Poggesi *et al.*, 2016; Al-Kwifl *et al.*, 2020; Oggero *et al.*, 2020; Hamid *et al.*, 2020; Omiunu, 2019; Pergelova *et al.*, 2019).

The research results show hypothesis 2 (H_2), which states that external support affects the level of entrepreneurship, is accepted. This research found that external support has a positive and significant effect on the level of entrepreneurship. It can be interpreted that the better the external support, the higher the level of entrepreneurship of female entrepreneurs. These results provide evidence that external support consisting of indicators of community support, business partner support, and government support will have a significant effect on the level of entrepreneurship. From an empirical perspective, the results of this research are in line with the results of previous studies examining the effect of external support on the level of entrepreneurship. The results of previous research indicate that external support has a positive and significant effect on the level of entrepreneurship (Soluk *et al.*, 2021; Steel, 2021; Bi *et al.*, 2017; Al-Kwifl *et al.*, 2020; Hansen, 2019; Omiunu, 2019; Chege *et al.*, 2020).

The research results show hypothesis 3 (H_3), which states that the effect of internal support on the level of entrepreneurship is strengthened by digital technology adoption for female entrepreneurs, is rejected. Based on Table 5 it is known that the effect of the interaction between digital technology adoption and internal support on the level of entrepreneurship has a positive (strengthening) path coefficient value, but this effect is not significant because P-Values > 0.05 (0.357). This research found that digital technology adoption has not been able to strengthen the influence of internal support on the entrepreneurial level of female entrepreneurs. The results of this research indicate that digital technology adoption is not statistically feasible to be a moderating variable. This can be interpreted that the factors supporting digital technology adoption such as the use of infrastructure, the use of Management Information Systems (MIS), and the use of the internet owned by female entrepreneurs have not been sufficient to increase the influence of internal support on the level of entrepreneurship.

The research results show hypothesis 4 (H_4), which states that the effect of external support on the level of entrepreneurship is strengthened by digital technology adoption for female entrepreneurs, is accepted. Based on Table 5, it is known that



the influence of the interaction between digital technology adoption and external support on the level of entrepreneurship has a positive (strengthening) path coefficient value and is significant at the 10% level ($0.070 < 0.1$). This research found that digital technology adoption was able to strengthen the influence of external support on the entrepreneurial level of female entrepreneurs. The results of this research indicate that digital technology adoption is statistically feasible to be a moderating variable. This can be interpreted that the factors supporting digital technology adoption such as the use of infrastructure, the use of Management Information Systems (MIS), and the use of the internet owned by female entrepreneurs can increase the influence of external support on the level of entrepreneurship.

The results of the research found hypothesis 5 (H_5), which stated that the level of entrepreneurship affected the performance of female entrepreneurs, was accepted. This research found that the level of entrepreneurship has a positive and significant effect on business performance. This can be interpreted that the higher the level of entrepreneurship, the better the performance of female entrepreneurs. These results provide evidence that the level of entrepreneurship which consists of indicators of opportunity, team and resources will have a significant effect on business performance which includes market share, sales and profits. From an empirical perspective, the results of this research are in line with the results of previous studies examining the effect of the level of entrepreneurship on business performance. The results of previous studies indicate that the level of entrepreneurship has a positive and significant effect on business performance (AS & Hartawati, 2019; Gulo & Khoiri, 2022).

5. Conclusion and Suggestion

To improve their business performance, female entrepreneurs must have a high level of entrepreneurship. The level of entrepreneurship is supported internally (family, finance, knowledge) and externally (community, business partners, government), and strengthened by digital technology adoption owned by female entrepreneurs. By using the PLS-SEM analysis it was found that internal and external support positively and significantly influenced the level of entrepreneurship of female entrepreneurs. The interaction between digital technology adoption and external support on the level of entrepreneurship is positive and significant, while the interaction between digital technology adoption and internal support for the level of entrepreneurship is positive but not significant. This means that digital technology adoption plays an important role in strengthening the relationship that occurs between external support and the level of entrepreneurship. In the end, the level of entrepreneurship has a positive and significant effect on the performance of female entrepreneurs.

The implication is that female entrepreneurs in Jember Regency should be able to read market opportunities that arise, have a team with technical competence and business management expertise, and have the resources to improve their business performance. Recommendations that can be given to the government, in this case, the Office of Cooperatives and Micro Enterprises of the Jember Regency, should



increase financial support, business training, and digital product marketing for female entrepreneurs. This research is limited to female entrepreneurs in the Jember Regency. So the results of this research cannot be generalized to other regions. Thus, future research is expected to use a wider area coverage at the national level so that the results can be generalized.

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