What Determinants Drives Digital Transformation Among Women Entrepreneurs in East Java? Insights from a Spatial Approach

Nila Cahayati[1*],

[1]Depertement of Development Studies, Faculty of Creative Design and Digital Business, Institut Teknologi Sepuluh November, Surabaya, Indonesia
nila.cahayati@its.ac.id

ABSTRACT

This research aims to analyze the determinants of digital transformation among female entrepreneurs, taking into account the interplay between spatial-cultural relationships and the process of digital transformation by women. In this study, East Java will be spatially and culturally divided into four cultural group Pandhalungan, Madura, Arek, and Mataraman. Hypothesis testing results indicate that female entrepreneurs in East Java are positively and significantly influenced by income levels, education, migration, marital status, the status of women as household heads, and asset ownership. On the other hand, age, the number of household members, and involvement in the primary sector negatively affect digitally transforming female entrepreneurs. Based on social implications, it can be concluded that the Pandhalungan, Arek, and Mataraman communities share similar characteristics, wherein the digital era has culturally opened doors and attempted to adapt to the times, notably by utilizing the internet as a means of facilitating transactions. Conversely, the Madura cultural group exhibits resistance to technological innovation, possibly due to factors such as high poverty rates, low Human Development Index (HDI), a prevalent patriarchal environment, and an insufficiently supportive environment for digitization, all contributing to the resistance to technological innovation among female entrepreneurs in this cultural group.

Keywords: women entrepreneurs, SMEs, digital transformation, spatial-cultural

1. INTRODUCTION

In many literature studies, MSMEs are a essential subject in the economies of countries in the world, especially developing countries (Kesk et al., 2017). Creating jobs (Badriyah, 2017), reducing unemployment rates (Badriyah, 2017; Kesk et al., 2017), dynamic levels of adaptation and innovation capabilities, and increasing people's purchasing power (KemenkopUKM, 2023) are important parts of MSMEs as the backbone of the country (Fitriasari, 2020; Khalil et al., 2022). Nowadays, digital transformation is a massive bridge to survive various economic activities and social interactions (Fitriasari, 2020; Khalil et al., 2022; Zainal Abidin et al., 2022). Digital transformation offers increased access, connectivity, and digital services and transforming various industry automation, business models, and supply chains (Francalanza et al., 2018) in a real time way.

East Java is the third province with the highest number of MSMEs in Indonesia (KemenkopUKM, 2023). In the development of MSMEs in East Java, the International Finance Corporation (2016) report shows that East Java is an area with a high level of MSMEs lead by women. In Figure 1, it is known that there is a difference between the distribution of women entrepreneurs in East Java and women entrepreneurs who are digitally transformed in East Java.

The areas with the highest distribution of MSMEs lead by women are in the Pamekasan, Jombang, Malang Raya, Jember, Bangkalan, Sumenep, Trenggalek, and Tulungaggung regions. This becomes interesting when women become the second subject in the perspective of gender roles in East Java (Wiranto, 2021). However, this has different characteristics, however Figure 2 shows the distribution of digital transformation by women entrepreneurs in the Greater Malang area, Surabaya City, Gresik, Jombang, Magetan, Trenggalek, Tulungaggung, Ponorogo, Blitar, Magetan, and Banyuwangi. Meanwhile, Sampang and Pamekasan are the areas with the least women entrepreneurs in digital transformation.

In its implementation, there are still 80% of MSMEs in East Java that still do not use digitalization as a transaction medium for selling goods and services (SUSENAS, 2023). On the other hand, there is also a digital divide in women who are entrepreneurs to transform digitally. It is known from SUSENAS 2022 data, there are 62% of men who use the internet for entrepreneurship while only 38% womenwho use the internet for entrepreneurship.

Figure 1. Distribution of women entrepreneurs in East Java
Source: BPS (2023)

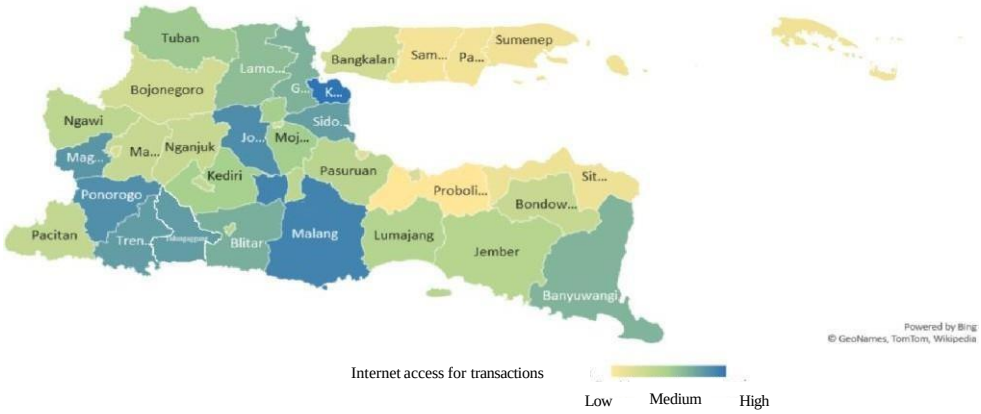

Figure 2. Distribution of internet access for transactions by women entrepreneurs in East Java
Source: BPS (2023)

This forms an interesting spatial characteristic to be studied in more depth why these regions have a tendency to differ in digital transformation, especially in women's entrepreneurship, even though they are in the same region of East Java. Cultural differences are one of the essential considerations in economic activities (Cahayati et al., 2024). Researcher

adopted a cultural-spatial multi-disciplinary approach to women-run entrepreneurship and how local places and institutions influence gender-oriented entrepreneurial behaviors (Welter et al., 2014).

If classified by Sutarto (2004) states that spatially culturally, East Java has four cultural clusterizations (majority) that blend into one in East Java called *Arek, Pandhalungan, Mataraman*, and *Madura* culture groups. Each of these clusterings has its own characteristics (Sutarto, 2004; Zoebazary, 2017). For example, based on their social and cultural constructs, *Madurese* who live on the coast and moorlands have unique and superior characteristics such as being very open, spontaneous, expressive, tenacious, hard, frugal, and diligent (Kuntowijoyo, 2002; Susanto, 2003; Sutjipto, 1983). The *Pandhalungan* cultural group is characterized by a strong Islamic influence so that the strerotype of patriarchal culture in this region becomes dominant (Setyaningsih & Abdur, 2014). Then, the *Arek* culture which has a hard character and as the center of economic growth in East Java. *Mataraman* culture is influenced by the culture of the *Mataraman* kingdom and is in direct contact with Hindu, Buddhist, Christian, and colonial cultures (Putra, 2013). Thus, prural characteristics are part of the character of *Mataraman* culture.

In previous research that also analyzed the relationship between culture and economic activity in East Java was Sakti, et al, (2010), where in their research stated that there was a relationship between the cultural dimensions of economic activity in East Java in the northern and southern corridors with environmental factors that form a cultural construct. which states that social and cultural values affect motivation, entrepreneurial intention, and performance.
In this case, studies on women entrepreneurship have been conducted by several researchers. But, the research studies on women entrepreneurs with cultural links have not been studied enough (Brush et al,., 2018; Hechavarria et al,., 2019). Thus, to fill the existing research gap, the author's aims is to analyze comprehensively in cross-multidisciplinary effect differences in determinants between digitally transformed women entrepreneurs in East Java. The implication is to consider cultural relations and technology resistance as a balance between the pace of innovation and user adaptation (Talwar et al., 2021).

2. LITERATURE REVIEW

In this digital era, digital transformation brings opportunity for empowering women entrepreneurs by MSMEs, particularly through enhanced digital literacy and skills (Luthfia et al., 2025). Support systems and training networks play a crucial role in overcoming barriers to digital adoption, such as limited digital skills, time constraints, and the challenge of balancing multiple roles (Hazudin et al., 2021; Luthfia et al., 2025; T. B. Nguyen et al., 2025; Olsson & Bernhard, 2020). In East Java, spatial analysis reveals varying levels of female entrepreneurship across regions with high motivation for additional income driving digitalization adoption (Cahayati et al., 2024). Intellectual capital, such as knowledge and skills, is the most critical enabler for digital transformation (Olsson & Bernhard, 2020). Further, from spatial context, regional digital readiness and supportive business environments enhance women's participation in entrepreneurship (Khasanah et al., 2023; Sudarso, 2019; Fitriasari, 2020; Laksmanawati & Yuniawan, 2021). For example, digital government transformation and inclusive policies in China and other regions have promoted female entrepreneurship by optimizing the business environment and fostering digital finance (Moeini Gharagozloo et al., 2023; Ran et al., 2024). In Egypt and South Africa, women are motivated by autonomy, family flexibility, and access to online markets, but often lack formal training and government support (Mousa et al., 2024; Swartz et al., 2022).

While the digital transformation recruiting digitally skilled employees and fostering informal, step-by-step learning are effective strategies for keeping pace with digitalization. Digital transformation offers women entrepreneurs opportunities to increase income, expand markets, and maintain customer relationships. It also helps overcome traditional barriers like mobility and market access, especially in developing regions (Luthfia et al., 2025; Mousa et al., 2024; T. B. Nguyen et al., 2025).

However, credit access and digital usage gaps still persist between male and female entrepreneurs (Cahayati et al., 2024). Women-led MSMEs embracing digitalization have experienced new opportunities for growth, market access, and financial independence (Khandelwal & Ashutosh Priya, 2024). Despite challenges such as multiple roles and time constraints (Luthfia et al., 2025), digital transformation is crucial for empowering women entrepreneurs and contributing to economic development, as MSMEs account for approximately 30% of India's GDP (Khandelwal & Priya, 2024). Further, challenges persist including digital stress, the need for continuous upskilling, and work–life balance pressures. Gender-based barriers, limited access to capital, and regional disparities further complicate the landscape (Khodor et al., 2024; T. B. Nguyen et al., 2025; Olsson & Bernhard, 2020).

Figure 3 Cultural Classification in East Java (majority groups)
Source: Sutarto & Sudikan (2004)

This spatial study adopted from Lefebvre's spatial triad provides a framework for analyzing the interplay between social, physical, and mental spaces in organizational settings (Watkins, 2005). Where studies highlight how gendered spaces constrain or enable women entrepreneurs, revealing the need for "spatial mobility work" to navigate safety, temporal, and perceptual challenges (Doshi & Venugopal, 2022). In terms of cultural clustering, this study will adopt the following clustering scheme according to Sutarto & Sudikan (2004), there are 10 cultural regions in East Java, which are mainly composed of four large areas. These four regions include the Arek culture (shown in light blue in Figure 3), which encompasses Surabaya, Malang, Sidoarjo, Pasuruan, Mojokerto, Jombang, and Gresik. The Mataraman culture (yellow in Figure 3) includes Blitar, Tuban, Lamongan, Bojonegoro, Nganjuk, Kediri, Ngawi, Magetan, Pacitan, Ponorogo, Trenggalek, and Tulungagung. The Madura culture (green in Figure 3) includes Bangkalan, Pamekasan, Sampang, and Sumenep. Lastly, the Pandhalungan culture (purple in Figure 3) includes Probolinggo, Situbondo, Bondowoso, Lumajang, and Jember.

3. METHODOLOGY

The data used in this study is the 2022 National Socio-Economic Survey (SUSENAS) data. Specifically, the data used is SUSENAS that has been filtered for East Java (consisting of 38 districts/cities). and employment with the assistance of temporary or unpaid workers. In the data analysis stage, the researchers filtered the data in two stages. In the first stage, the data was filtered based on groups living in East Java. Next, the data was filtered based on the criteria of women who were engaged in business activities. After filtering in accordance

with the research framework and objectives, the number of respondents in East Java was determined to be 7,546. The following data will be used in the study:

Table 1 Operational Variables

Variables	Definition	Category
Internet_transction	Internet access used to sell goods or services	1 = used for selling
Ln_income_capita	Natural logarithm of per capita expenditure	-
Age	Age of female entrepreneurs	-
Marstat	Marital status of women	1 = married
Educ	Highest level of education attained	
Region	Urban or rural	1 = urban
Sectors	Business sector:	
	Agriculture	1 = Smes on agriculture
	Services sector	1 = Smes on service
	Trade sector and manufacture	1 = Smes on agriculture
Credit	Credit access on:	1 = credit accessed
	Small business loans (KUR)	
	Informal credit	
	Online loan	
Migration	Female entrepreneurs who migrate	1 = migrant
Hh_members	Number of family members	
Gov_aid	Government assistance for MSMEs	1 = receiving assistance
Asset	Mobile phone ownership	1 = owned
Women_status	Women as heads of households	1 = women as a head of household

This research uses the quantitative approach of Binary Logistic Regression as a method to answer the research objectives of understanding the determinants of digital transformation on the welfare of women entrepreneurs based on spatial culture in East Java Province. The dependent variable in this study is the use of the internet in women entrepreneurs for the sale of goods and services in East Java (Y). The probability in each category of the multinomial logistic regression model with two categories with empirical equations (equation 2) with the probability of women entrepreneurs to sell goods and services is (i = 0 dan $ez0$ = 1) and (i = 1) for women entrepreneurs. The equation of the logistic regression equation to be tested is presented:

$$Internet\_transction\ (\mathrm{Y}) = \beta_{i0} + \beta_{i1}\ln\ \_income\_capita + \beta_{i2}age + \beta_{i3}marstat + \beta_{i4}educ + \beta_{i5}region + \beta_{i6}sectors + \beta_{i7}asset + \beta_{i8}credit + \beta_{i9}migration + \beta_{i10}hh\_members + \beta_{i11}women\_stats + \beta_{i12}gov\_aid\_SMEs \ldots (1)$$

From the equation above, we will analyze the specifics of the determinant condition women in entrepreneurship and digital transformation in the East Java region and their spatial-cultural divisions of Arekan, Mataraman, Pandhalungan, and Madura.

4. RESULT AND DISCUSSION

4.1. Result

According the result from analysis, the descriptive test results show that the characteristics of women entrepreneurs in East Java are 45 years old with married status and engaged in the secondary sector. This is supported by the findings of (Laksmanawati & Yuniawan, 2021) stating that the motivation of women entrepreneurs to start small businesses is to get additional income. In accessing credit, women entrepreneurs do not use loans and KUR. This is because in pinjol access, they do not fully understand (still low digital literacy) the systematics of credit access through online loans (Wardani et al., 2021). It raises concerns about the stigma of online loans that charge a fantastic amount of interest (Prajogo & Rusno, 2022).

Table 2 Descriptive Statistics

Variables	Mean	Std. Dev
Internet_transction	0,046	0,211
Age	39.889	13.885
Marital status	0,720	0,449
Household members	3,826	1,415
Women status	0,097	0,295
Region	0,534	0,499
Migrant	0,023	0,152
Women graduated from highschool	0,265	0,441
Women graduated from higher education	0,103	0,304
SMEs on Agriculture sectors	0,181	0,385
SMEs on manufacture and trade	0,171	0,376
SMEs on services	0,171	0,377
Small business loans (KUR)	0,112	0,315
Infromal credit	0,011	0,106
Online loan	0,001	0,036
Government aid on SMEs (BPUM)	0,025	0,156

Source: BPS (2022), data processed

The study categorizes women entrepreneurs who are digitally transformed in East Java into four cultural regions: Arek (40%), Mataraman (27%), Pandhalungan (26%), and Madura (7%). The Arekan region is East Java's core economic growth area (districts/cities include Surabaya, Gresik, Mojokerto, and Sidoarjo), as well as the focus of higher education (Surabaya and Malang). So that this helps the high digital transformation of women entrepreneurs, and the high industrial area provides a field for women entrepreneurs to start firms because of the dense population and

Table 3 Logistic Regression Result

Variable	East Java	Arek	Mataraman	Pandalungan	Madura
	Coef.	*Coef.*	*Coef.*	*Coef.*	*Coef.*
Income capita	0,410***	0,330***	0,511***	0,486***	0,477*
Age	0,085***	-0,001***	-0,001***	-002***	-0,00
Age_square	-0,001***	0,000***	0,091***	0,126***	0,020
Household members	-0,020	0,033	-0,004	0,036	-0,159
Region	0,200**	0,330**	0,083	0,118	0,577*
Migrant	0,246**	0,537	0,070	0,053	(omitted)
Women status as Household head	-0,122***	-0,179***	-0.098**	-0,029	-0,158
Married women	0,127*	0,113	0,099	0,088	-0,050
Women graduated from highschool	0,327***	0,278***	0,249***	0,481***	0,923***
Women graduated from higher education	0,462***	0,394***	0,513***	0,338*	1,209***
Mobile phone ownership	2,678***	2,346***	2,311***	2,237***	(Omitted)
Informal credit	-0,085	-0,082	0,426	(Omitted)	(Omitted)
Online loans	0,776*	0,942	0,883	0,072	(Omitted)
Small business loans (KUR)	0,232***	0,295**	0,154	0,063	0,058
Government aid on SMEs (BPUM)	0,632***	0,677***	0,675***	0,143***	0,019
SMEs on Agriculture sectors	0,061	0,469	-0.079	0.459	0,007
SMEs on manufacture and trade	1,666***	1,624***	1,682***	1,600***	2,526***
SMEs on services	1,136***	1,183***	0,059***	1,085***	1,569***

Note:
***significant at the 1% level
**significant at the 5% level
*significant at the 10% level

Source: Susenas 2022, BPS (processed)

active economy in the Arekan area (Hutahayan, 2019; Zainal Abidin et al., 2022). The *Arekan* region that moves dynamically, giving influence to women entrepreneurs to be able to adjust to shifting into digitalization.

Table 3 shows the results of logistic regression analysis to determine the determinants of the use of digitalisation for selling among women entrepreneurs in East Java. According to Sugandini, et al (2020) technology resistance (image barriers, traditions, value barriers, risks, and use) found in MSMEs can be caused by several things, such as inadequate human resource readiness, low digital literacy, and technology infrastructure is also inadequate or inadequate. The complexity of barriers to technological resistance and the exculpation of women in accessing the internet is a complex part for women to take advantage of the momentum of digitalization (Musyaffi et al., 2022). From the results of the logistic regression test, it shows that income, age, number of household members, region of residence, migrant women, education, asset ownership, and government intervention have a significant effect in increasing the likelihood of digital transformation in women entrepreneurs in East Java.

Then, to find out specifically the differences in inter-spatial-cultural determinants in East Java, the results show that income per capita, asset ownership, and education have a significant effect on all *Pandhalungan, Madura, Arek,* and *Mataraman* cultural groups. This finding is in line with (Asrofi et al,., 2022) which states that there are specific factors that affect the *Madura* region, such as access to digital infrastructure, human resource capabilities can be represented by the quality of education (Khasanah et al., 2023). The low level of education is a door to resistance to technological innovation. Where there are differences in user beliefs, tradition barrier (culture barrier) where every woman who will transform digitally is trapped in conventional traditions and feels someone is less capable (usage barrier) in using a digital innovation so that they find it more difficult in the transaction process (Musyaffi et al,., 2022).

The age variable shows a negative and significant effect on the *Mataraman, Arekan, Pandalungan*, and *Madura* cultural groups. This shows that the older the age, the smaller the chance of digital transformation. This can be because the age factor can be an obstacle for someone to accept a new technology (their ability to absorb thinking in learning new technology is decreasing) (Asrofi et al,., 2022; Hidayat et al,., 2021) or in this case, if analyzed according to the theory of technological resistance, this is in line with that user barriers, capabilities, and concerns about the risks of a technology appear as part of technological innovation resistance (Hazudin et al., 2021; Luthfia et al., 2025; T. B. Nguyen et al., 2025; Olsson & Bernhard, 2020). Priya & Bose (2020) in their research stated that women aged 20-30 years tend to have a probability of creating/starting an online business than the 30-40 age group. Meanwhile, the age group of 40-50 years is known to be less likely to start their business independently.

The *Madura, Arek,* and *Mataraman* regions show a lower probability of digital transformation for married women compared to those who are unmarried or divorced in these regions. This is when associated with the number of household members (ART) having an insignificant positive influence on digital transformation in women entrepreneurs in *Pandhalungan, Madura, Arek*, and *Mataraman*. The two are related According to Asrofi, et al, (2022), Nguyen (2022), Priya & Bose (2020) it is stated that the number of family members becomes a dependency by women entrepreneurs, so that the number of family members becomes a dependency. Thus, minimizing the possibility of women entrepreneurs to transform digitally. This is in line with the theory of gender roles (Eagly, 1997), where women occupy the second subject and play a role in household works and taking care of children (Direja & Paramitasari, 2022; Kamberidou, 2020; Nawaz, 2009) altough digitalization is close to their lives. However, in the *Pandalungan* cultural group, it shows that ever-married status (widow) has a high probability of digital transformation. This finding is in line with Alimuddin (2021), states that women with widow status, which is also related to the status of women as heads of households, because women who are widows have a heavy burden of family dependents, so in this case they will ward off risks and transform into entrepreneurs who can manage businesses while taking care of the household.

In regions such as *Pandhalungan* and *Mataraman*, entrepreneurial women who migrate are very likely to be digitally transformed. In the Arek region, migration has a significant effect ($p <$

0.01). This is because the *Arek* region is identical to the economic growth center of East Java. So that women who are entrepreneurial and migrate in the *Arekan* region have lower resistance to adapting to technological innovation because of the purpose of the migration they do with the main reason due to the economic limitations faced in order to increase income (Cahyono et al., 2021; Ni Wayan Sri Astiti, 2005; Syafitri, 2012). On credit access for the Pandhalungan group entrepreneurs who have access to KUR tend to have a higher chance of digital transformation. Meanwhile, in the *Mataraman* and *Arek* regions, the odds ratio shows that entrepreneurs who access KUR tend to have a lower chance of digital transformation. This can be attributed to women entrepreneurs accessing KUR as a bridge for them to become literate and it is assumed that they get spill-over from one part of government intervention, namely KUR, which is easily accessible to entrepreneurs. This finding is in line with Erlando et al,., (2020) which states that KUR in the Horseshoe region, which is part of the KUR program, is easily accessible to entrepreneurs. As for government intervention through Government Assistance for Micro Business (BPUM), it shows that in the *Arek* and *Mataraman* groups, women entrepreneurs who receive BPUM assistance tend to have a higher chance and a positive effect on digital transformation. These findings are in line with Gharagozloo et al., (2023) and Ran et al., (2024) how government assistance and support for digital transformation and inclusion policies in China and other regions have encouraged female entrepreneurship by optimising the business environment and developing digital finance.

5. CONCLUSION

Women's entrepreneurship in East Java is positively and significantly influenced by income level, education, migration, marital status, status as head of household, and asset ownership. Meanwhile, age, number of household members, and employment in the primary sector have a negative effect on women entrepreneurs who are digitally transformed. According to spatial culture, the Pandhalungan, Arek, and Mataraman communities have similar features and characteristics where in the era of digitalization, in terms of culture, they have opened the door and tried to adapt to the times, one of which is by utilizing the internet as a connecting-hand. While group Madurese culture group, has characteristics that are quite resistant to technological innovation. This can be due to several factors such as the high level of poverty in the area, low HDI, high patriarchal environment, and environmental constructs that do not fully support digitalization are some of the factors that shape technological innovation resistance in women entrepreneurs.

Furthermore, in the social implications of these results, there are several things that can be considered. First, an emphasis on education and training that takes into account the role of women as heads of households can open up greater opportunities for digital transformation, especially in the Madura and Pandhalungan regions. This will not only have an impact on women's economic level, but can advance the family and community as a whole. Women with a conducive entrepreneurial environment will increase motivation and efforts to emulate success in that environment. For the Arek and Mataraman regions, education and training efforts are needed to increase business scale, product diversification, and export procedures for small, large, and medium enterprises. Secondly, the importance of equal access to technology and support for women in all walks of life to ensure equal digital inclusion. Thus, the creation of equal opportunities for women in the Pandhalungan, Madura, Arek, and Mataraman regions can strengthen their contribution to the regional economy while ensuring equal access and utilization of digital technology for all.

REFERENCES

Alimuddin, A. (2021). Penggunaan Internet Dan Peluang Berwirausaha Di Indonesia. *Jurnal Kewirausahaan Dan Bisnis*, *26*(2), 112. https://doi.org/10.20961/jkb.v26i2.50913

Asrofi, D. A. N., Pratomo, D. S., & Pangestuty, F. W. (2022). Determinan Wirausaha Perempuan Pengguna Transaksi Digital Selama Pandemi Covid-19 Di Indonesia. *Jurnal Ekonomi Indonesia*, *11*(2), 193–210. https://jurnal.isei.or.id/index.php/isei/article/view/235%0Ahttps://jurnal.isei.or.id/index.php/isei/article/download/235/66

Badriyah, N. (2017). Social Capital of human Resources in SMEs on Competitive Advantages. *Journal of Applied Management (JAM)*, *15*(3), 491–500.

BPS. (2022). *SUSENAS: Survei Sosial Ekonomi Nasional Tahun 2022*. Badan Pusat Statistik (BPS).

Cahayati, N., Syafitri, W., & Badriyah, N. (2024). Mapping the Digital Footprint of Women Entrepreneurs in East Java. *KnE Social Sciences*, *2024*, 698–711. https://doi.org/10.18502/kss.v9i21.16777

Cahyono, E., Syafitri, W., & Susilo, A. (2021). Ethnicity, Migration, And Entrepreneurship In Indonesia. *Journal of Indonesian Applied Economics*, *9*(1), 1–12. https://doi.org/10.21776/ub.jiae.2021.009.01.1

Direja, S., & Paramitasari, N. (2022). Pengaruh Ketidaksetaraan Gender Pada Pendidikan Terhadap Kemiskinan Di Provinsi Banten. *Jurnal Ilmiah Ekonomi Bisnis*, *27*(1), 58–70. https://doi.org/10.35760/eb.2022.v27i1.5063

Doshi, V., & Venugopal, S. (2022). Space, Gender, and Class: Spatial Mobility Work in Women Entrepreneurship. *Academy of Management Proceedings*. https://doi.org/https://doi.org/10.5465/AMBPP.2022.13118abstract

Eagly, A. H. (1997). Sex differences in social behavior: comparing social role theory and evolutionary psychology. *The American Psychologist*, *52*(12), 1380–1383. https://doi.org/10.1037/0003-066X.52.12.1380.b

Erlando, A., Haryanto, T., & Rositawati, V. (2020). Determinan Kemiskinan Rumah Tangga di Jawa Timur. *Jurnal Ekonomi Pembangunan*, *9*(2), 89–105. https://doi.org/10.23960/jep.v9i2.97

Fitriasari, F. (2020). How do Small and Medium Enterprises (SMEs) survive the COVID-19 outbreak ? Research method. *Jurnal Inovasi Ekonomi*, *05*(02), 53–62.

Francalanza, E., Borg, J., Vella, P., Farrugia, P., & Constantinescu, C. (2018). An "Industry 4.0" digital model fostering integrated product development. *2018 IEEE 9th International Conference on Mechanical and Intelligent Manufacturing Technologies, ICMIMT 2018*, *2018-Janua*, 95–99. https://doi.org/10.1109/ICMIMT.2018.8340428

Hazudin, S. F., Sabri, M. F., Kader, M. A. R. A., & Ishak, M. (2021). Empowering Women-owned Businesses in the Era of Digital Transformation: A Review of the Opportunities and Challenges. *International Journal of Academic Research in Business and Social Sciences*, *11*(19), 231–244. https://doi.org/10.6007/ijarbss/v11-i19/11731

Hidayat, A., Prasetya, F., & Wulandari, F. (2021). Role of Internet Accessibility in Reducing the Poverty rates in Java; a Spatial Approach. *Journal of Indonesian Applied Economics*, *9*(1), 21–31. https://doi.org/10.21776/ub.jiae.2021.009.01.3

Hutahayan, B. (2019). Factors affecting the performance of Indonesian special food SMEs in entrepreneurial orientation in East Java. *Asia Pacific Journal of Innovation and Entrepreneurship*, *13*(2), 231–246. https://doi.org/10.1108/apjie-09-2018-0053

IFC. (2016). Women-owned SMEs in Indonesia: A Golden Opportunity for Local Financial Institutions. *International Finance Corporation (IFC)*, *March*, 69.

Kamberidou, I. (2020). "Distinguished" women entrepreneurs in the digital economy and the multitasking whirlpool. *Journal of Innovation and Entrepreneurship*, *9*(1). https://doi.org/10.1186/s13731-020-0114-y

KemenkopUKM. (2023). *Data UMKM Indonesia 2022*. https://ukmindonesia.id/baca-deskripsi-posts/data-umkm-jumlah-dan-pertumbuhan-usaha-mikro-kecil-dan-menengah-di-indonesia

Kesk, H., Gentürk, C., & Sungur, O. H. M. (2017). The importance of SMEs in developing economies.

2nd International Symposium on Sustainable Development, 183–192.

Khalil, A., Abdelli, M. E. A., & Mogaji, E. (2022). Do Digital Technologies Influence the Relationship between the COVID-19 Crisis and SMEs' Resilience in Developing Countries? *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(2), 100. https://doi.org/10.3390/joitmc8020100

Khandelwal, R., & Ashutosh Priya. (2024). Digital Transformation To Spur Women Empowerment in Msmes: a Case Study Approach. *ShodhKosh: Journal of Visual and Performing Arts*, *5*(1). https://doi.org/10.29121/shodhkosh.v5.i1.2024.1605

Khasanah, U., Dwi.F, E., & Erfania. (2023). Persepsi Suku Madura Dalam Keberlanjutan Pendidikan. *Seminar Hasil Riset Dan Pengabdian*, *4*, 1114–1122.

Khodor, S., Aránega, A. Y., & Ramadani, V. (2024). Impact of digitalization and innovation in women's entrepreneurial orientation on sustainable start-up intention. *Sustainable Technology and Entrepreneurship*, *3*(3), 100078. https://doi.org/https://doi.org/10.1016/j.stae.2024.100078

Kuntowijoyo. (2002). *Madura Mata Bangsa*.

Laksmanawati, J., & Yuniawan, A. (2021). Women and the Digitalization Strategies of Micro, Small, and Medium Enterprises in the New Normal Era. *Petra International Journal of Business Studies*, *4*(1), 55–64. https://doi.org/10.9744/ijbs.4.1.55-64

Luthfia, A., Herwati, E., Rosidah, & Bismo, A. (2025). Digital Transformation and Sustainable Growth: Empowering Women Entrepreneurs in MSMEs Through Enhanced Digital Literacy. *2025 19th International Conference on Ubiquitous Information Management and Communication (IMCOM)*, 1–7. https://doi.org/10.1109/IMCOM64595.2025.10857542

Moeini Gharagozloo, M. M., Forghani Bajestani, M., Moeini Gharagozloo, A., Amini Sedeh, A., & Askarzadeh, F. (2023). The role of digitalization in decreasing gender gap in opportunity driven entrepreneurship. *Information Technology for Development*, *29*(4), 645–664. https://doi.org/10.1080/02681102.2023.2237470

Mousa, M., Shahzad, F., & Misbah Shabana, M. (2024). Digital entrepreneurship among Egyptian women: autonomy, experience and community. *Journal of Small Business and Enterprise Development*, *31*(7), 1378–1399. https://doi.org/10.1108/JSBED-11-2023-0560

Musyaffi, A. M., Gurendrawati, E., Afriadi, B., Oli, M. C., Widawati, Y., & Oktavia, R. (2022). Resistance of Traditional SMEs in Using Digital Payments: Development of Innovation Resistance Theory. *Hindawi: Human Behavior and Emerging Technologies*, *2022*. https://doi.org/https://doi.org/10.1155/2022/7538042 Research

Nawaz, F. (2009). Critical Factors of Women Entrepreneurship Development in Rural Bangladesh. In *Bangladesh Development Research Working Paper Series (BDRWPS* (Vol. 5, Issue May). https://doi.org/10.2139/ssrn.3500834

Nguyen, T. B., Kumar, M., Sahoo, D. K., Nain, N., Yadav, M., & Dadhich, V. (2025). Mapping the landscape of women entrepreneurs in micro and small enterprises: Trends, themes, and insights through systematic review and text mining. *F1000Research*, *14*, 422. https://doi.org/10.12688/f1000research.163030.1

Nguyen, T. T., Nguyen, T. T., & Grote, U. (2022). Internet use, natural resource extraction and poverty reduction in rural Thailand. *Ecological Economics*, *196*(February), 107417. https://doi.org/10.1016/j.ecolecon.2022.107417

Ni Wayan Sri Astiti. (2005). Keadaan sosial ekonomi rumahtangga migran perempuan di desa miskin wilayah bali timur. *Studi Jender Srikandi.*, *1*(5), 1–12.

Olsson, A. K., & Bernhard, I. (2020). Keeping up the pace of digitalization in small businesses–Women entrepreneurs' knowledge and use of social media. *International Journal of Entrepreneurial Behavior & Research*, *27*(2), 378–396. https://doi.org/10.1108/IJEBR-10-2019-0615

Prajogo, U., & Rusno, R. (2022). Perceived Risk of Interest in Making Online Loans with Ease of Use as a Moderating Variable. *MBR (Management and Business Review)*, *6*(1), 22–32.

Putra, M. G. B. A. (2013). Peran kearifan lokal dalam resolusi konflik keyakinan beragama di Jawa Timur The role of local wisdom for religions conflict resolution in East Java. *Masyarakat, Kebudayaan Dan Politik*, *26*(1), 1–14.

Ran, R., Yang, X., Liu, Z., Wang, Q., & Chen, Y. (2024). Does Digital Government Transformation Drive Social Inclusion? Evidence from Female Entrepreneurship in China. *Journal of Chinese Political Science*. https://doi.org/10.1007/s11366-024-09899-x

Setyaningsih, P., & Abdur, R. (2014). Pekerja Perempuan da Segmentasi Pasar Kerja Menurut Wilayah Kebudayaan di Provinsi Jawa Timur (Analisa SAKERNAS 2012). *Jurnal Bumi Indonesia*, *15*(1), 165–175.

Sugandini, D., Irhas Effendi, M., & Istanto, Y. (2020). The Resistance of SMEs in Adopting Social Media:TOE Model. *Covid-19 – Reshaping Marketing and Communications*, *2020*, 44–53. https://doi.org/10.51432/978-1-8381524-7-5_5

Susanto, H. (2003). *Dampak Sosial Segregasi Etnis Madura di Perkotaan*. Universitas Airlangga.

Sutarto, A., & Sudikan, S. Y. (2004). *Pendekatan kebudayaan dalam pembangunan provinsi Jawa Timur*. Jember: Pemerintah Provinsi Jawa Timur & Kompyawisda.

Sutarto, A. (2004). Menguak Pergumulan antara Seni, Politik, Islam, dan Indonesia. *Kompyawisda Dan Pemprov Jatim*.

Sutjipto, F. (1983). *Kota-kota Pantai di Sekitar Selat Madura: Abad XVII sampai dengan Medio Abad XIX*. Universitas Gadjah Mada.

Swartz, E. M., Scheepers, C. B., & Toefy, T. (2022). Women entrepreneurs' opportunity identification of digital platform start-ups: emerging evidence from South Africa. *International Journal of Gender and Entrepreneurship*, *14*(3), 352–374. https://doi.org/10.1108/IJGE-06-2021-0096

Syafitri, W. (2012). *Wildan Syafitri International Labor Migration*.

Talwar, S., Dhir, A., Scuotto, V., & Kaur, P. (2021). Barriers and paradoxical recommendation behaviour in online to offline (O2O) services. A convergent mixed-method study. *Journal of Business Research*, *131*(April), 25–39. https://doi.org/10.1016/j.jbusres.2021.03.049

Wardani, D. K., Nugroho, S. P., & Prabowo, A. A. (2021). Pengaruh Persepsi Etis Dan Religiusitas Terhadap Niat Umkm Melakukan Pinjaman Online Pada Masa Covid-19. *Kajian Bisnis Sekolah Tinggi Ilmu Ekonomi Widya Wiwaha*, *29*(2), 81–92. https://doi.org/10.32477/jkb.v29i2.296

Watkins, C. (2005). Representations of Space, Spatial Practices and Spaces of Representation: An Application of Lefebvre's Spatial Triad. *Culture and Organization*, *11*(3), 209–220. https://doi.org/10.1080/14759550500203318

Wiranto, R. (2021). Women, Culture and Identity (a Reflection of Kartini'S Struggle for the Liberation of Indonesian Women - an Anthropological Study). *PalArch's Journal of Archaeology of Egypt / Egyptology*, *18*(4), 4317–4330. https://archives.palarch.nl/index.php/jae/article/view/7025

Zainal Abidin, Z., Rahayu, S. M., Pamungkas, M. G. W. E. N., Handayani, S. R., & Utami5, R. B. (2022). Entrepreneurial Knowledge, Market Orientation, Digitalization, and Entrepreneurial Competencies: Evidence from SMEs in Indonesia. *Journal of Economics, Finance and Accounting Studies*, *4*(2), 91–103. https://doi.org/10.32996/jefas.2022.4.2.8

Zoebazary, M. I. (2017). *Orang Pendalungan*. Paguyupan Pandhalungan Jember. http://repository.unej.ac.id/bitstream/handle/123456789/65672/Ainul Latifah-101810401034.pdf?sequence=1