Research Article

Mapping the Digital Footprint of Women Entrepreneurs in East Java

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Abstract.
This research objective comprehensively analyze characteristics based on East Java female entrepreneurs. The selection of East Java as the research subject stems from being the second province with the highest number of MSMEs in Indonesia. The research gap, examined descriptively and spatially, aims to provide a more comprehensive insight into the digital transformation of female entrepreneurs in East Java and its correlation with the social construction perspective through an in-depth literature review. The patterns within the relationship between female entrepreneurship and socio-cultural constructs will contribute novelty to this analytical study. The data utilized in this study are secondary and numeric, obtained through the National Socioeconomic Survey (SUSENAS) in 2022 and have been analyzed in descriptive statistics. The result revealed that from spatial analysis, it is observed that Sumenep, Pamekasan, Bojonegoro, Malang, and Jember are the regions with the highest levels of female entrepreneurship in East Java. Meanwhile, areas with the lowest levels of female entrepreneurship are the cities of Madiun, Pasuruan, Probolinggo, and Mojokerto. The high motivation of female entrepreneurs is for additional income, and they adopt digitalization strategies to optimize their operations and income. Further, there remains a noticeable credit access, usability, and digital usage divide gap among male and female entrepreneurs in East Java.

Keywords: women empowerment, SMEs, digitalization, gender equality

1. Introduction

Female entrepreneurs are among the essential elements contributing to job creation and economic growth in developing countries (De Vita et al., 2014; Fitriasari, 2020; Shah & Saurabh, 2015; Zhang & Zhou, 2021). Besides fostering economic productivity, female entrepreneurship also acts as a driver for gender equality and poverty alleviation (Aly, 2022; De Vita et al., 2014) aligning with the Sustainable Development Goals (SDGs). In digitalization era, the business supply-chain experiences increased efficiency, reduced costs, and optimized processes.(Kauffman & Walden, 2021). Consequently, women tend to benefit more than men in this regard (Aly, 2022). This is due to prior constraints faced by women related to cultural constructs (Bullough et al., 2022; Nawaz, 2009;
With the advent of digital transformation, women receive the blessing of flexibility in jobs that can be done anywhere and anytime, while managing family-career balanced. Hence, women can generate income even while working from home. (Nagel, 2020). Furthermore, several studies also suggest that digital transformation provides SMEs access to broader markets, such as e-commerce, and enhances operational efficiency (Chatterjee dkk., 2022; Kahle dkk., 2020; Ulas, 2019).

This research aims to comprehensively analyze characteristics based on East Java female entrepreneurs. The selection of female entrepreneurial subjects is based on women having lower levels of adaptation and entrepreneurial intention compared to men (Crant, 1996; Murphy, 2006). The cultural construct shapes an exclusivity paradigm among women (Bullough et al., 2022; Nchimbi, 2002) to leverage digital transformation in entrepreneurship (Gill et al., 2020). Furthermore, Yusof et al., (2017) in their study stated that the development and acceptance of culture along with environmental motivation positively influence women’s ongoing entrepreneurial endeavors. Specifically, this research will analyze the state of digital transformation among women entrepreneurs in East Java. The selection of East Java as the research subject stems from being the second province with the highest number of MSMEs in Indonesia (KemenkopUKM, 2023), Moreover, it’s accompanied by a significant increase in the gross value added of MSMEs to the regional GDP in East Java, reaching 12.31% in 2022 (at current prices). Hence, the emerging research question from this phenomenon is whether the cultural constructs in regional clustering in East Java are interconnected?. The research gap, examined descriptively and spatially, aims to provide a more comprehensive insight into the digital transformation of female entrepreneurs in East Java and its correlation with the social construction perspective through an in-depth literature review. The patterns within the relationship between female entrepreneurship and socio-cultural constructs will contribute novelty to this analytical study.

In the first section, the author describes the background, objectives, problem statements, and research gaps. The second part will delve into the theories underpinning the study. The third section will outline the research methodology used to address the study’s objectives. The fourth part will comprehensively present the research findings. Finally, the conclusion and recommendations will be provided in the closing section.
2. Literature Review

Schumpeter (1947) proposing innovation as a fundamental aspect of economic transformation. Schumpeter's theory on innovation and entrepreneurship has garnered significant attention, contributing to economic development (Pol dan Carroll, 2006). In the era of the 4th industrial Revolution, innovation is reshaping the economic structure toward digital service sectors. One of the sectors significantly affected by the Fourth Industrial Revolution's innovation includes those with high production costs in transportation, logistics, information, regulation, and transactions (Nambisan et al., 2017; Rymarczyk, 2021; Zairis, 2020). Entrepreneurs have the ability to drive innovation, as evidenced by advancements in digital technology and mobile phones. To reap the benefits of digitization, gender equality becomes a determinant factor in how entrepreneurial innovation can create a positive impact on women's income growth (Chatterjee et al., 2022; Maziku et al., 2014). It is imperative to understand the relationship between gender equality in access to entrepreneurial innovation and its impact on the increase of female entrepreneurial income. Priyabadini (2022) states that concerning digital innovation, the effectiveness and efficiency for women entrepreneurs in India are restricted by barriers such as limited access, low education, as well as social-cultural biases and norms, limiting women's ability to capitalize on opportunities offered by digital transformation. Stereotypes position women on the wrong side of digital diversity. Wiesner (2018) found that rural women entrepreneurs face significant barriers such as limited digital access, lack of communities or peers in similar fields, a shortage of entrepreneurial mentors, and limited network access. Thus, digital transformation, such as social media, can facilitate better empowerment for women by altering communication or networking methods, fostering relationships, and seeking assistance (Nord et al., 2016; Rosenbaum, 2017). Social media, when compared to other digital technologies, has created a platform that facilitates better communication, collaboration, and improved opportunities for beneficial initiatives. There are limitations in empirical research exploring the gender impact on digital technology (Lopez-Sintas et al., 2020; Pergelova et al., 2019). Previous studies have highlighted a lack of attention in exploring the utilization of digital technology by women (Dy et al., 2017).

3. Method

In its classification, this research is exploratory in nature. Exploratory research is a type of study aimed at analyzing various factors or variables numerically or statistically in the
initial stages to better understand specific phenomena and insights, considering several social dimensions (Creswell, 2008). Based on the research objectives mentioned above, the research approach utilized to address the issue is a quantitative with a descriptive approach to ascertain the overall conditions in East Java or specific regions concerning classification.

3.1. The data and respondent sampling

The data utilized in this study are secondary and numeric, obtained through the National Socioeconomic Survey (SUSENAS) in 2022 conducted by the Indonesian Central Statistics Agency (BPS), with specific data involving respondents from East Java. The SUSENAS data is a survey intended to collect social population data, with the respondent sample encompassing the entire population of Indonesia. SUSENAS data covers areas such as education, health, nutrition, housing, other socio-economic activities, expenditure, income, travel, and household welfare income. Household sample selection was systematically done based on the population list of individuals obtained from the 2022 SUSENAS update. Implicit stratification was utilized, considering the type of work performed by women, including self-employment, assisting permanent or paid labor, and assisting temporary or unpaid labor. The research employed a two-stage sampling process for data analysis. Initially, data was filtered based on groups residing in East Java. Subsequently, the data was refined based on criteria for women involved in entrepreneurial activities. Following this, a systematic sampling method was used to select respondents for the study.

4. Result and Discussion

Based on the analysis results obtained, presented here are the descriptive analysis results from 50,615 respondents in the study. From the sampling results, it was found that there were 7,546 female entrepreneurs in East Java. More specifically, the following are the main characteristics of female entrepreneurs in East Java.

4.1. Women entrepreneurs in East Java

The analysis results indicate that overall, the respondents, both female and male entrepreneurs in East Java, have an average age of 42 years. The average education level is 11 years, falling into the junior high school category. Moreover, the female
entrepreneur sample indicates an average age of 41 years with an educational average obtained at the junior high school level.

**TABLE 1: Descriptive statistics woman - men.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region</td>
<td>50614</td>
<td>.522</td>
<td>.5</td>
</tr>
<tr>
<td>Sex</td>
<td>50614</td>
<td>.608</td>
<td>.488</td>
</tr>
<tr>
<td>Age</td>
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<td>42.254</td>
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<tr>
<td>Highest edu</td>
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<td>11.727</td>
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<tr>
<td>Work status</td>
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<td>.593</td>
<td>.84</td>
</tr>
<tr>
<td>Hp owned</td>
<td>50614</td>
<td>1.632</td>
<td>1.459</td>
</tr>
<tr>
<td>Using Hp capabilities</td>
<td>50614</td>
<td>2.034</td>
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</tr>
<tr>
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<td>1.898</td>
</tr>
<tr>
<td>Internet for access</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>information about goods &amp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>services</td>
<td>50614</td>
<td>.182</td>
<td>.386</td>
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<tr>
<td>Credit access</td>
<td>50614</td>
<td>.183</td>
<td>.387</td>
</tr>
<tr>
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<td>Generation classification</td>
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</table>

Source: BPS (data processed)

**TABLE 2: Descriptive statistics woman. Source: BPS (data processed).**

<table>
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<th>Mean</th>
<th>Std. Dev.</th>
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<tbody>
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</tr>
<tr>
<td>Sex</td>
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<td>0</td>
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<td>Work status</td>
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<td>Hp owned</td>
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<td>Using Hp capabilities</td>
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<td></td>
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<tr>
<td>information about goods</td>
<td></td>
<td></td>
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<tr>
<td>&amp; services</td>
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The utilization of internet access for entrepreneurial endeavors, stratified by educational levels across various regions in East Java, revealed diverse patterns. Among the categories, individuals with higher educational attainment demonstrated a consistently higher trend in internet usage for entrepreneurial activities, with those from higher education backgrounds registering the most substantial figures across regions. Contrarily, individuals with lower education levels, particularly the unschooled and elementary-educated, depicted markedly lower utilization rates (Yusof, 2017).

Spatially (Figure 2) it can be observed that Sumenep, Pamekasan, Bojonegoro, Malang, and Jember are the regions with the highest levels of female entrepreneurship in East Java. Meanwhile, areas with the lowest levels of female entrepreneurship are the cities of Madiun, Pasuruan, Probolinggo, and Mojokerto. The high motivation of female entrepreneurs is for additional income, and they adopt digitalization strategies to optimize their operations and income (Laksmanawati & Yuniawan, 2021; Nagel, 2020). On the other hand, motivation and environment shape women in entrepreneurship (Fitriasari, 2020; Laksmanawati & Yuniawan, 2021). Sumenep and Pamekasan are areas with the highest rate of female entrepreneurship, as several findings indicate that Madura’s culture, characterized by a very high work ethic and significant migration culture, fosters a high entrepreneurial spirit among women in this cultural context (Kuntowijoyo, 2002; Susanto, 2003). Furthermore, the Malang area is also significantly linked to the high rate of female entrepreneurship. The city of Malang known as an
educational hub has a positive impact on the spillover of innovation and digitalization growth in MSMEs run by women (Yulianto & Supriono, 2023; Zainal Abidin et al., 2022).

The figure below (Figure 3) represent the count of individuals (men and women) categorized by their usage or non-usage of the internet in urban and rural regions. The clear distinction between men and women’s usage of the internet indicates bahwa terdapat gap antara laki-laki dan perempuan dalam mengakses internet. Hal ini sejalan dengan Wiesner (2018) The finding reveals that rural female entrepreneurs encounter significant barriers, such as limited digital access. Additionally, Dy (2017) states that the capacity for exploration and attention toward technology utilization by women remains notably minimal.

In the Figure 4, it clearly shows that female entrepreneurs in utilizing the internet media still encounter a disparity compared to males in leveraging digitalization for entrepreneurial activities in East Java. Several assumptions from previous research studies indicate that structural issues like the digital divide are happen in some regions thus it makes lack adequate access to technology or internet infrastructure (Cahyono et al., 2021; Zainal Abidin et al., 2022). Further, it might disproportionately affect women in entrepreneurial roles. Additionally, societal norms regarding gender roles and responsibilities might also impact the time allocation and priorities of men and women, influencing their engagement with internet-based activities related to entrepreneurship differently (Hamid et al., 2020; Priyabadini, 2022; Welch et al., 2008).

In several findings, credit access has been deemed highly essential in aiding SMEs to initiate and endure business fluctuations. However, as depicted in Figure 5, there
remains a noticeable credit access gap for women in East Java. This finding aligns with (Ongena, 2003) found that in countries with higher gender bias, female entrepreneurs are more likely to be discouraged from applying for bank credit, leading to reliance on
informal finance. Malik (2005) emphasized the potential of microcredit in empowering women, but also noted its limitations in addressing inequalities and discrimination. Pal (2023) identified individual, social, and economic factors influencing women’s credit access in rural India, and highlighted the positive impact of credit access on women’s empowerment. This statement also in line with study from (Hussin & Aziz, 2021; Khan et al., 2020; Tariq et al., 2020) state that microfinancing and credit give the significant impact to women enterprise.

\[\begin{array}{|c|}
\hline
\text{Access Credit on Woman Entrepreneurs} \\
\hline
\text{Men} & 1724 \\
\hline
\text{Woman} & 1021 \\
\hline
\end{array}\]

\textbf{Figure 5:} Access Credit on Woman Entrepreneurs. Source: BPS (data processed).

In this closing statement, we can conclude that female entrepreneurs in East Java still tend to exhibit a gender gap in the utilization of digital transformation. Digital technology not only provides business information access for women entrepreneurs but also assists them in achieving a balance between work and personal life (Nord et al., 2016; Rosenbaum, 2017). Individuals’ ability to use digital technology in SMEs connected to technology can contribute to reducing the digital skills gap between genders, especially in rural areas. This presents significant opportunities for improvement. Support and motivation among surrounding bring the huge impact to female entrepreneurs keep the business sustain (Fitriasari, 2020). Further there is a need for more specific and targeted policy measures to support high-growth, female, and social entrepreneurs, who play a crucial role in economic growth (Terjesen et al., 2016). To bolster female entrepreneurship, policy interventions should center on fostering an inclusive ecosystem. Initiatives promoting financial literacy and access to capital are crucial (Kesk et al., 2017; Terjesen et al., 2016). Targeted mentorship programs tailored to women entrepreneurs can facilitate skill enhancement and networking opportunities (Hamid et al., 2020; Nord et al., 2016; Rosenbaum, 2017; Salam et al., 2020; Zainal Abidin et al., 2022). Additionally, policies encouraging flexible work arrangements and supportive
childcare facilities can alleviate the burden of balancing work and family responsibilities, fostering an environment conducive to female entrepreneurship. Lastly, promoting gender-responsive digital skill development programs (Fitriasari, 2020; Kamberidou, 2020; Olsson & Bernhard, 2021) could bridge the digital divide and empower female entrepreneurs to harness digital technologies for business growth.

5. Conclusions

From the analysis we can conclude that female entrepreneurs indicates an average age of 41 years with an educational average obtained at the junior high school level. From spatial analysis, observed that Sumenep, Pamekasan, Bojonegoro, Malang, and Jember are the regions with the highest levels of female entrepreneurship in East Java. Meanwhile, areas with the lowest levels of female entrepreneurship are the cities of Madiun, Pasuruan, Probolinggo, and Mojokerto. The high motivation of female entrepreneurs is for additional income, and they adopt digitalization strategies to optimize their operations and income. Further, there remains a noticeable credit access, usability, and digital usage divide gap among male and female entrepreneurs in East Java. Policies encouraging flexible work arrangements and supportive childcare facilities can alleviate the burden of balancing work and family responsibilities, fostering an environment conducive to female entrepreneurship. Lastly, promoting gender-responsive digital skill development programs could bridge the digital divide and empower female entrepreneurs to harness digital technologies for business growth.

References


