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ORIGINAL SCIENTIFIC PAPER

Development of Antecedent Factors for Malaysian Women's Entrepreneurial Resilience Framework: A Fuzzy Delphi Method

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A B S T R A C T

Despite the potential role of individual resilience as a significant predictor in explaining successful ventures, understanding the drivers of resilient entrepreneurs has not yet been fully explored. The lack of studies on this important topic may

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undermine the growth prospect and equality pursuit of underserved economic segments, which is imperative to highlight as studies have depicted that women undergo more significant business struggles than their counterparts. This study identifies and assesses the key antecedent factors of women's entrepreneurial resilience framework based on the Malaysian context. Guiding by the literature review process to develop the framework, the study used the Fuzzy Delphi method to screen and determine experts' consensus on the validity of the factors proposed. The judgment sampling technique was used to identify panel experts, and 12 out of 19 experts voluntarily participated in the study. Using Microsoft Excel, the experts' linguistic consensus was analyzed based on Fuzzy Set Theory and Triangular Fuzzy Numbers. This study confirmed experts' agreement on all five antecedent factors, namely psychological capital, spiritual capital, social capital, digital literacy practices, and financial management practices, to be valid factors supporting the development of resilient women entrepreneurs in Malaysia. Importantly, intangible factors such as psychological and religious resources are key to developing entrepreneurial resilience among women entrepreneurs. Furthermore, social capital among key social networks has been confirmed as the antecedent to support resilience. Two aspects of cognitive and behavioral factors (digital literacy practices and financial management practices) are considered important determinants of women's entrepreneurial resilience.

KEYWORDS: *entrepreneurial resilience, women entrepreneurs, multicriteria decision making, Fuzzy Delphi method, COVID-19*

Introduction

The uncertainties of the business environment due to the COVID-19 pandemic threaten the sustainable growth of the future economy and global human development. COVID-19 has led to huge sales revenue losses, job terminations, and social problems such as domestic financial damage, family-related conflicts and violence, depression, and suicide (Fegert et al., 2020). Particularly, smaller, more open economies are more likely to experience alarming economic uncertainty (Corsetti & Pesenti, 2001). As a model of a developing country, Malaysia is no exception facing the slowdown of the economy due to the COVID-19 pandemic, which could have impacted more than 90% of SMEs to risk closure (SME Corp Malaysia, 2021). Businesses owned by women entrepreneurs have been disproportionately under pressure (OECD, 2020), leaving their economic and social welfare at stake as socio-economics factors have been their most prevalent driving forces in entrepreneurial pursuit (Rani et al., 2019).

Compared to men-led businesses, women's entrepreneurship domain has been more fragile as women dominated in crisis-prone sectors (i.e., retail, tourism, hostility). Often in disadvantaged positions in securing key survival resources, overrepresented in micro-sized businesses, it is susceptible to economic shock due to its over-reliance on domestic value chains and the market, even more with conflicting responsibilities between family and managerial duties at work (OECD, 2021).

After almost two decades, Malaysia has recorded somewhat lower progress in women's entrepreneurship, as can be witnessed by only a four percent increase in women-owned business establishments from 2005 to 2021 (Department of Statistics, 2021). Further, despite the sector's contribution being significant and evidenced by the RM69 billion income that successfully accounted for 2021's national income, yet, in terms of business performance rate, the trend had shown a decreasing pattern even before the COVID-19 pandemic occurred (Chipfunde et al., 2021). Accordingly, the business performance rate of Malaysian women entrepreneurs experienced steady growth from 9.7 percent in 2015 to 13.5 percent in 2016 and increased to 25.9 percent in 2017. However, it was observed then that its performance rate suddenly dropped to 20.2 percent in 2018 and worsened to 11.6 percent by 2019, which is expected to be worst during the crisis period (2020 – 2021). Arguably, the plausible reasons for the decline in the entrepreneurial activity pattern could be the structural and contextual disadvantages. This may cause a challenge to women's entrepreneurial success, and the resilience of their businesses raises questions about the implications of policies.

Following the COVID-19 pandemic, social scientists and policymakers actively develop policies and programs to restore entrepreneurial performance and understand adaptation strategies to prepare for potential crises (Gregurec et al., 2021; OECD, 2021). Some evidence from the literature has argued the ability of entrepreneurial resilience to assist individual entrepreneurs in surviving the hardships of managing and developing an enterprise. The importance of the study on the functionality of entrepreneurial resilience in the context of women's entrepreneurship is said to be a strategic step in promoting the creation of economic enterprises and marginalized economic communities. This is because the internal psychological strength of individuals can be an effective protective factor against constraints on their business survival and recovery support resources (Badzaban et al., 2021; Matharu & Juneja, 2021). Given the scenario that

business owned by women often faces greater challenges than their male counterparts, this suggests that resilient women entrepreneurs have a superior capability to thrive against uncertain backdrops and adapt to changes quickly and innovatively to prosper in business (Salamzadeh et al., 2022).

Literature indicates that entrepreneurial resilience is capable of being nurtured. However, the understanding of the factors that underpin the formation of an entrepreneurial-resilient entrepreneur personality has not yet been fully studied (Duchek, 2018; Salamzadeh et al., 2022). Generally known, a precursor to entrepreneurial resilience can be generally classified into three factors (Qalati et al., 2023), which are identified as the functional role of (1) intrapersonal; (2) interpersonal; and (3) contextual that builds resilience capacity for women entrepreneurs by the intervention of new policy to boost the ability of entrepreneurs to rebound. However, the antecedents of entrepreneurial resilience are relatively understudied and even scarce in demonstrating the realism of women's entrepreneurship. The lack of attention to this significant topic renders urgent research to explore the potential enablers of women's entrepreneurial resilience, particularly in strengthening the performance and business longevity of Malaysian women entrepreneurs. Furthermore, given that the underlying resilience factors may vary largely, establishing viable and more appropriate resilience practices and programs that are perceived to be critical and supportive to the development of resilient women, SMEs can be better sought when the indicators can be individually assessed, validated, and endorsed employing experts' consensus in the field.

Considering the relatively scarce research outlining key strategic resources to the development of women's entrepreneurial resilience and its importance towards better entrepreneurial outcomes, the present study proposes a Fuzzy Delphi method (FDM) study to identify, rank and validate the resilience factors and its primary criteria to offer women's resilience framework. The findings from the study aim to provide evidence about strategies to build key resilience resources or protective assets to safeguard the future sustainability of women-owned businesses, particularly in the context of developing economies such as Malaysia.

Literature Review

In today's challenging business environment, small businesses and marginal entrepreneurs are more often adversely affected by hostile market conditions, from rivalry to major unsystematic risks (Bullough & Renko, 2013; Doern, 2017; Duchek, 2018). Given the above points, it is important to understand how entrepreneurs survive adversity by theoretically explaining the connectivity of the underpinning concept of key resources that explain successful adaptation against calamity backdrops of entrepreneurial endeavors to lead successful ventures.

Resilience has been studied as internal and external variables that directly or indirectly affect the positive adaptation to difficulties (De Vries et al., 2015; Duchek, 2020; Hedner & Klofsten, 2011). It represents resource-based assets that individuals or organizations acquire, which positively affect the development of resilience (Duchek, 2020; Sultan & Sultan, 2020). The role and impact of resilience dynamics should be further explored to advance current entrepreneurial knowledge, especially the impact on entrepreneurial development (Herbane, 2019; Quagrainie, 2020).

Antecedents of Entrepreneurial Resilience

Entrepreneurial resilience is associated with personal entrepreneurial traits influencing positive crisis management behaviors. For example, entrepreneurial self-efficacy enables individuals to self-assess and execute appropriate business actions during a crisis. Consequently, entrepreneurs will grow and thrive without hesitation despite adversity (Bullough & Renko, 2013). Fang et al.'s (2020) study postulated that psychological capital promotes entrepreneurial resilience, such as self-efficacy, hope, optimism, and organizational resiliency. Entrepreneurial resilience can be enhanced through behavioral characteristics such as flexibility, motivation, perseverance, and optimism (De Vries & Shields, 2005; Duchek, 2018; Qalati et al., 2023). In addition, Rani et al. (2019) also elucidated that hardiness and resourcefulness are two entrepreneurial resilience variables contributing to rural entrepreneurs' success. These psychological resilience factors facilitate the development of individual protective resources to efficiently overcome external and uncontrollable threats (Doern, 2017; Masten, 2001).

Spiritual capital is a vital entrepreneurial resource that facilitates a growth mindset beyond financial motives and adapts a "meaning and value"

perspective (Vasconcelos, 2021). Women entrepreneurs developed businesses for economic orientation and other emerging opportunities, such as self-fulfillment, experience, knowledge and skills sharing, providing job opportunities, and family decision-making abilities (Chhabra et al., 2020). Spiritual aspects can rectify the negative business crisis implications through self-recognition and benevolence (Khan, 2015). Conversely, Adawiyah and Pramuka's (2017) study investigated workplace spirituality and elucidated that spiritual rejuvenation is essential when confronting major work conflicts and stress. The entrepreneurs' spirituality is vital to significantly cultivate entrepreneurial capabilities, particularly in Muslim entrepreneurs during the COVID-19 pandemic (Junusi & Mubarok, 2020).

Meanwhile, in Herbane's (2019) study, social capital in weak associations promotes entrepreneurial resilience. These social relationships enable valuable information exchange between stakeholders. Social capital relies on entrepreneurial network relationships among family and friends, formal relationships, and strangers. Networks enable small businesses to seek advice, professional support, and resource exchange during adverse situations (James, 2000). The vital role of networks is important in supporting entrepreneurs to successfully deal with contract enforcement, transaction costs, and business activity regulation obstacles (Nichter & Goldmark, 2009). Conversely, network relationships are a resilience-enhancing resource to aid crisis recovery (Coates et al., 2016). Nichter and Goldmark's (2009) study highlighted that social networks are costly and inaccessible for underprivileged entrepreneurs. The study indicated that women entrepreneurs are often marginalized due to unequal social capital systems and cannot utilize social networking for small business growth. Therefore, this study investigates the social capital element that increases Malaysian women entrepreneurs' resilience.

Behavioral factors, such as skills and abilities, increase entrepreneurial resilience. Duchek (2018) explained that behavioral element positively impacts entrepreneurs' resilience, ensuring business success. Knowledge and skills are vital for evaluating business viability, particularly during uncertainties. According to Quagrainie's (2020) study, women entrepreneurs with high knowledge and abilities and the ability to apply these skills have higher resilience tendencies. Financial management and digital management practices are appropriate strategies for developing resilient women entrepreneurs. These two factors have enabled

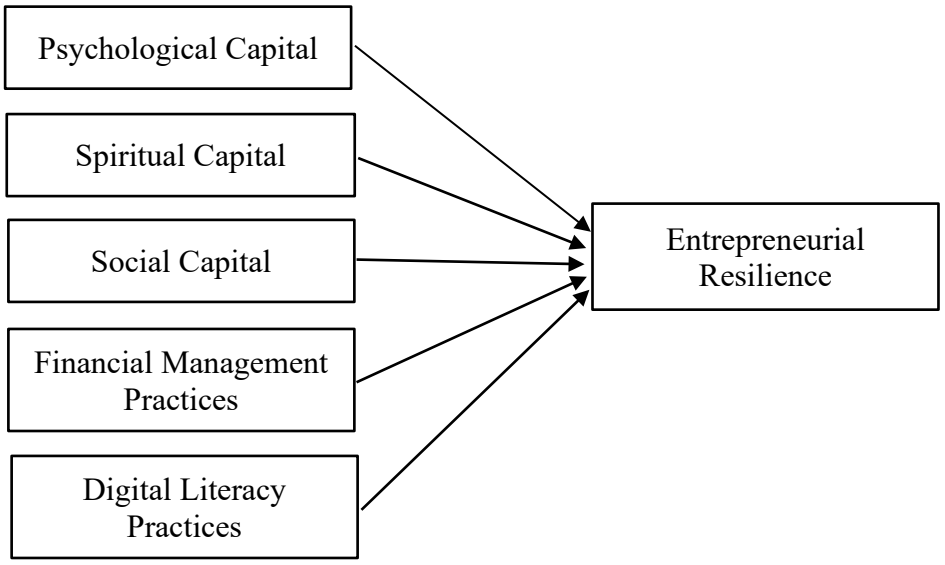
businesswomen to overcome the COVID-19 pandemic crisis in 2020 (Sultan & Sultan, 2020).

Efficient financial management practices, such as cash and credit management, are essential to lower financial stress and sustain business performance during a crisis (Salignac et al., 2019). Irrespective of organizational size and ownership, efficient financial practices will mitigate harmful uncertainty consequences (Welsh et al., 2018). Consequently, effective financial management practices drive SME profit performance and promote business expansion during challenging business climates (Selvanayaki et al., 2016).

The digital revolution has significantly impacted innovation growth and enhanced the entrepreneurial economy. Mobile technology, e-commerce platforms, and digital business solutions like financial technology are rapidly increasing with social network technology development (Steininger, 2019). The modern, innovative business model utilization has become increasingly associated with crisis solution needs due to social mobility limits. Ranatunga et al.'s (2020) study postulated that digital technology application has positively affected small entrepreneurs' economic performance during uncertainties in Sri Lanka. Similarly, Palestinian women entrepreneurs affected by conflict have utilized online marketing and social media to enhance their products and services (Sultan & Sultan, 2020). Pergelova et al.'s (2019) study mentioned that women are more inclined to obtain a competitive business advantage than male entrepreneurs by understanding digital technologies.

Based on the literature reviewed, this study proposes the antecedent factors that can be considered in the construction of Malaysian women's entrepreneurial resilience framework. These factors are illustrated in Figure 1, which includes psychological capital, spiritual capital, social capital, financial management practices, and digital literacy practices, which are to be validated by the consensus of Malaysian entrepreneurship experts using the FDM technique.

Figure 1: A proposed antecedent's framework for women's entrepreneurial resilience



Source: authors' compilation

Research Methods

This study assembled five antecedent factors with underlying criteria which were theoretically perceived as critical and supportive to the development of women's entrepreneurial resilience. The theoretical definitions of the variables and their respective measurements were priorly investigated to ensure their suitability with the current research context. All five key variables were selected based on adaptation from highly reliable scales, as compiled in Table 1, to ensure the reliability of the underlying criteria represented by the item construct. Accordingly, the adaptation of psychological capital ($\alpha = 0.89$) with a twelve-item was adapted originally from Luthans et al. (2007), spiritual capital ($\alpha = 0.94$) with a fourteen-item was assessed from Rakošec et al. (2015), an eight-item of the social capital construct ($\alpha = 0.83$) was derived from Wang et al. (2014), financial management practices ($\alpha = 0.79$) and digital literacy practices ($\alpha = 0.92$) with a-ten and nine-items, respectively were adapted from Nyabwanga et al. (2012) and Ranatunga et al. (2020). All the variables with the formation of a total of 53 items had a Cronbach's Alpha (α) value greater than the

threshold of 0.70, indicating acceptable scale reliability (Nunnally & Bernstein, 1994).

Table 1: Measurement Scale Adopted in the Study

Construct	No. of Item	Scale Reliability	Reference
Psychological Capital	12	0.88;0.89;0.89;0.89	(Luthans et al., 2007)
Spiritual Capital	14	0.94	(Rakošec et al., 2015)
Social Capital	8	0.83	(Wang et al., 2014)
Financial Management Practices	10	0.78;0.76;0.82	(Nyabwanga et al., 2012)
Digital Literacy Practices	9	0.92	(Ranatunga et al., 2020)

Source: authors' compilation

To collect data, 19 experts were shortlisted based on the judgment sampling technique as panel assessors and were invited to participate voluntarily through formal email communication. The expert selection will be based on several important criteria, which include only experts with more than five years of experience and direct involvement in entrepreneurship-related activities, particularly related to women's entrepreneurship, to ensure the credibility of the findings (Habibi et al., 2015; Paliwoda, 1983). To determine the expert's criterion, Google Scholar and the official website of Malaysian universities and government agencies were utilized to obtain publication outputs, curriculum vitae, and managerial responsibilities information. The experts chosen were limited to Malaysian academicians and industry practitioners to assess women entrepreneurs' resilience from a Malaysian perspective. The Fuzzy Delphi's designated questionnaire consisted of two sections: i) experts' background information, such as experience and specialization field, and ii) five construct items with a seven-point Likert scale to capture experts' consensus. The data collection was scheduled for August 2021 and was completed in October 2021.

The study adopted the FDM technique of Ishikawa et al. (1993), which integrated the traditional Delphi technique with fuzzy set theory to interpret linguistic preference fuzziness of human views. All the 53 items or criteria belonging to five antecedents' variables will be assessed using Fuzzy's Likert scale developed by Chang et al. (2011), ranging from 1 (Extremely

Unimportant) to 7 (Extremely Important) as depicted in Table 2, which corresponds to the value of Triangular Fuzzy Number (TFN).

Table 2: Fuzzy's Likert Scale Based on Linguistic Expressions and TFN Value

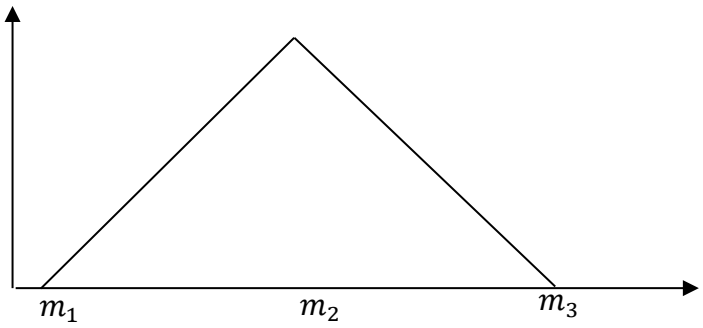
Likert Scale	Linguistic Expressions	TFN
1	Extremely Unimportant (EU)	(0.0, 0.0, 0.1)
2	Very Unimportant (VU)	(0.0, 0.1, 0.3)
3	Unimportant (U)	(0.0, 0.3, 0.5)
4	Moderately Important (MI)	(0.3, 0.5, 0.7)
5	Important (I)	(0.5, 0.7, 0.9)
6	Very Important (VI)	(0.7, 0.9, 1.0)
7	Extremely important (EI)	(0.9, 1.0, 1.0)

Source: Chang et al., 2011

The TFN is utilized to obtain the fuzzy membership degree to determine the experts' consensus converging value. Moreover, the fuzziness of uncertainty in the expert's opinion must be determined before applying the Likert scale as it conveys a flat score. For example, an evaluation score of 6 (very important) given by an expert will be converted into a 0.7 fuzzy score or 70% agreed minimum value, 0.9 or 90% agreed most reasonable value, and 1.0 or 100% agreed maximum value. Further, the TFN, which is represented by *M,* is denoted with three real numbers as $M(m_1,m_2,m_3)$ where the upper bound, m_3, is the maximum *M* value, the lower bound, m_1, is the minimum *M* value, and m_2 is the probable *M* value, as shown in Figure 2. The membership function of a triangular fuzzy number *M* is given by the formula as follows:

$$\mu_M(x)=\begin{cases}\frac{x-m_1}{m_2-m_1} & ; m_1<x<m_2\\ \frac{m_3-x}{m_3-m_2} & ; m_2<x<m_3\\ 0 & ;otherwise\end{cases} \qquad (1)$$

Figure 2: Triangular fuzzy number $M = (m_1, m_2, m_3)$



Source: Ishikawa et al. (2013)

The data analysis will follow the sequence order in which the TFN expert score will be averaged and labeled as m1, m2, and m3 for the first step. This study applied Soleymani et al.'s (2021) approach to FDM analysis using Microsoft Excel 2020. In the second step, the item's threshold value, *d,* is determined based on the average TFN (m_1, m_2, m_3) and the TFN item score difference from each expert (n_1, n_2, n_3). The *d*-value, once determined, can be served as a guideline to conclude that the experts' consensus has successfully confirmed when the value is smaller than or equal to 0.2 (*d*-value ≤ 0.2) and is computed using the following formula:

$$d(\tilde{m}, \tilde{n}) = \sqrt{\frac{1}{3}[(m_1 - n_1)^2 + (m_2 - n_2)^2 + (m_3 - n_3)^2]} \quad (2)$$

Subsequently, the construct's threshold value (*d*-construct) will be computed to decide whether the experts' consensus has been confirmed on the acceptability of the proposed constructs. The *d*-construct value is subjected to experts' consensus when the value is smaller or equal to 0.2 (*d*-construct ≤ 0.2) and is computed using the following formula:

$$\textit{Threshold Value (d-construct)} = \frac{\sum \textit{Average item threshold value d}}{\textit{Total experts} \times \textit{Total items}} \quad (3)$$

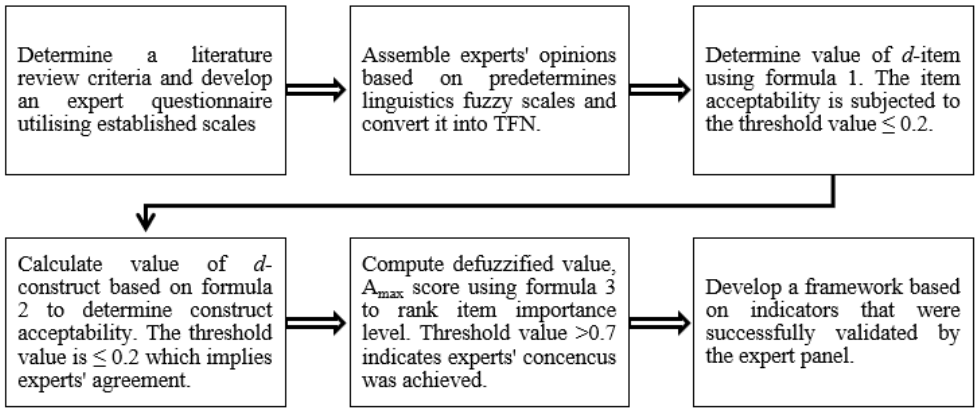
The items representing a construct can be ranked according to their level of importance based on the defuzzification technique. The technique

generates the defuzzified value, A_{max} which the threshold value is set at 0.7 for the acceptance condition of the item (Amax ≤ 0.7) and is computed using the formula:

$$A_{max} = \frac{1}{3}(m_1 + m_2 + m_3) \quad (4)$$

Finally, the overall FDM process flow chart that governs the methodology used in the study is simplified based on the illustration in Figure 3.

Figure 3: FDM Process Flow Chart



Source: authors' compilation

Result

A total of 12 experts voluntarily agreed to participate in the study and completed Fuzzy Delphi's survey form, equivalent to a 63 percent response rate. Owing to the relatively limited experts with strong knowledge in the field of study, it is acceptable that the panel size requirements practically fall within 10 to 18 members (Paliwoda, 1983). The expert panel information is presented in Table 3 and reveals a satisfactory combination of expert criteria in entrepreneurship research, training, development, and managerial experiences. About 50 percent of the experts had experienced more than 10 years in their respective area of expertise, most of which were the academic staff of public universities. In Malaysia, the policy towards achieving the national agenda of becoming an entrepreneurial nation by

2030 has also been well crafted into the university's curriculum design to produce graduates with entrepreneurial mindsets and necessary skills. Therefore, such policy has encouraged the involvement of academic teaching staff to carry out research and industry-community linkages in supporting the agenda. The experts are also among the Ph.D. holders except one expert with an academic bachelor's degree with strong managerial experience of more than 10 years in working with training and development projects for entrepreneurs under the government-linked agency.

Table 3: Expert Panel Information

No.	Designation	Expertise	Experience	Affiliation
1	Professor (Ph.D.)	Research; Training and Development Program; Managerial position	> 10 years	Public University
2	Professor (Ph.D.)	Research	6 – 10 years	Public University
3	Professor (Ph.D.)	Research; Training and Development Program; Managerial Position	> 10 years	Public University
4	Professor (Ph.D.)	Research; Training and Development Program	> 10 years	Public University
5	Professor (Ph.D.)	Research; Training and Development Program	6 – 10 years	Public University
6	Senior lecturer (Ph.D.)	Research and Training	> 10 years	Public University
7	Senior Lecturer (Ph.D.)	Training	5 years	Private University
8	Senior Lecturer (Ph.D.)	Research	5 years	Public University
9	Senior Lecturer (Ph.D.)	Research and Managerial Position	> 10 years	Public University
10	Senior Lecturer (Ph.D.)	Research and Training	> 10 years	Public University
11	Head of Department (Ph.D.)	Training and Development Program	6 – 10 years	Government Agency
12	Director (Bachelor's degree)	Training and Development Program	> 10 years	Government Agency

Source: authors' compilation

The five constructs representing Malaysian women's entrepreneurial resilience factors and the underlying measurement criteria are depicted in Table 4. All *d*-construct values are below the ≤ 0.2 threshold value ranging from 0.0127 to 0.0187, indicating an acceptable construct threshold level. This indicates that experts have mutually agreed that psychological capital, spiritual capital, social capital, financial management practices, and digital application practices are vital factors in generating resilient women entrepreneurs. Notably, all nine criteria denoting digital application practices show a definite experts' consensus (*d*-value ≤ 0.2), particularly on criteria 2, which addresses the usage of social media for business purposes (A_{max} = 0.945**)**. In addition, the analysis retained only 33 criteria (*d*-value ≤ 0.2), whereas 20 other criteria were discarded as they exceeded the acceptable threshold value (*d*-value > 0.2), indicating the experts' panel perceived the criteria as not important.

Overall, the assessment of antecedent factors using the FDM has confirmed all the proposed five constructs, namely: psychological capital, spiritual capital, social capital, digital literacy practices and financial management practices to be a valid factor supporting the development of an entrepreneurial resilience framework for Malaysian women entrepreneurs. Therefore, the study's overall framework is reorganized and displayed in Figure 4 based on their ranking position of A_{max} score in Table 4.

Table 4: The TFN and defuzzification results

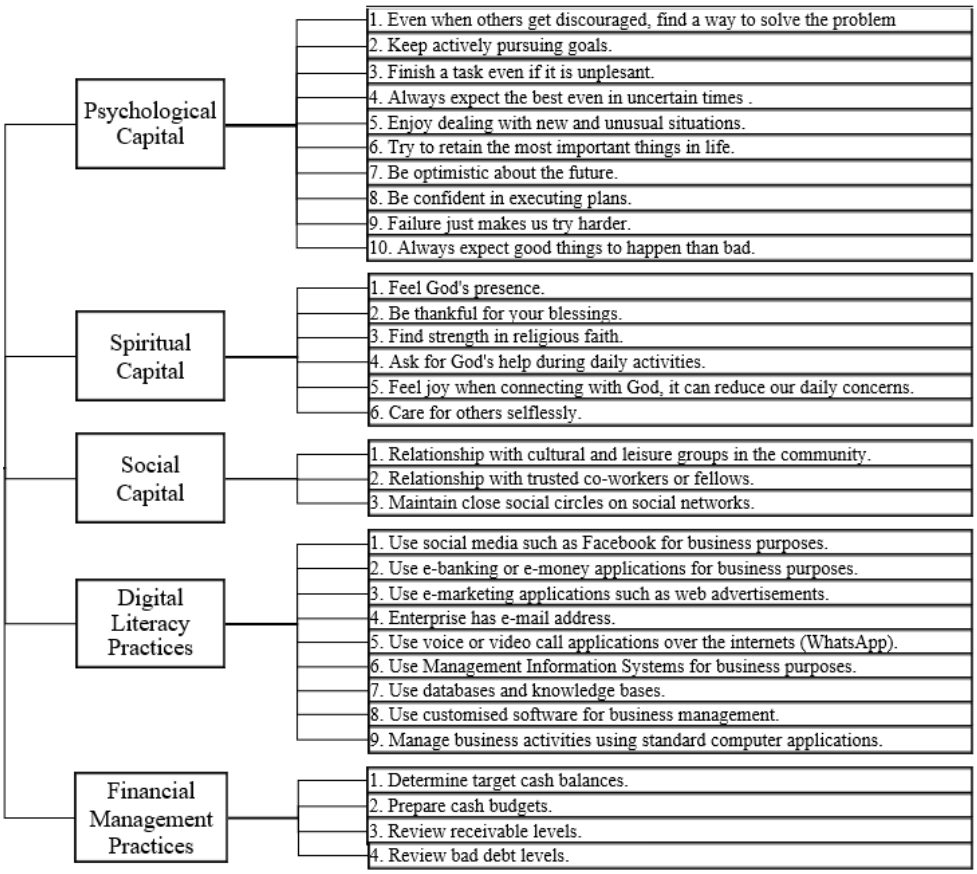
Construct/item	*d*-construct	*d*-value (item)	Average FN	A_{max} Score	Ranking	Decision
Psychological Capital	0.0128					
Criteria 1		0.093	0.7449 0.9043 0.9826	0.877	4	Retained
Criteria 2		0.178	0.5710 0.7747 0.9203	0.755	9	Retained
Criteria 3		0.190	0.6549 0.8426 0.9426	0.813	7	Retained
Criteria 4		0.190	0.6549 0.8426 0.9426	0.813	7	Retained
Criteria 5		0.172	0.6353 0.8280 0.9426	0.802	8	Retained
Criteria 6		0.147	0.7679 0.9203 0.9826	0.890	3	Retained
Criteria 7		0.059	0.8469 0.9655 1.0000	0.937	2	Retained
Criteria 8		0.151	0.7177 0.8927 0.9655	0.859	6	Retained
Criteria 9		0.060	0.8599 0.9740 1.0000	0.945	1	Retained
Criteria 10		0.083	0.7337 0.8964 0.9826	0.871	5	Retained
Criteria 11		0.242*				Discarded
Criteria 12		0.300*				Discarded
Spiritual Capital	0.0161					
Criteria 1		0.064	0.8570 0.9763 0.9913	0.942	1	Retained
Criteria 2		0.227*				Discarded
Criteria 3		0.124	0.7728 0.9113 0.9763	0.887	4	Retained
Criteria 4		0.127	0.7847 0.9193 0.9763	0.893	3	Retained
Criteria 5		0.217*				Discarded
Criteria 6		0.225*				Discarded
Criteria 7		0.127	0.7847 0.9193 0.9763	0.893	3	Retained
Criteria 8		0.255*				Discarded
Criteria 9		0.202*				Discarded
Criteria 10		0.256*				Discarded
Criteria 11		0.252*				Discarded

Construct/item	*d*-construct	*d*-value (item)	Average FN			A_{max} Score	Ranking	Decision
Criteria 12		0.163	0.8188	0.9509	0.9913	0.920	2	Retained
Criteria 13		0.141	0.7248	0.8819	0.9678	0.858	5	Retained
Criteria 14		0.326*						Discarded
Social Capital	0.0179							
Criteria 1		0.262*						Discarded
Criteria 2		0.178	0.6029	0.8103	0.9262	0.780	2	Retained
Criteria 3		0.191	0.5290	0.7376	0.8985	0.722	3	Retained
Criteria 4		0.216*						Discarded
Criteria 5		0.172	0.6353	0.8280	0.9426	0.802	1	Retained
Criteria 6		0.229*						Discarded
Criteria 7		0.225*						Discarded
Criteria 8		0.245*						Discarded
Digital Literacy Practices	0.127							
Criteria 1		0.173	0.711	0.876	0.959	0.849	4	Retained
Criteria 2		0.050	0.860	0.974	1.000	0.945	1	Retained
Criteria 3		0.158	0.690	0.861	0.959	0.837	5	Retained
Criteria 4		0.170	0.711	0.876	0.959	0.849	4	Retained
Criteria 5		0.173	0.667	0.848	0.951	0.822	7	Retained
Criteria 6		0.177	0.736	0.890	0.968	0.864	3	Retained
Criteria 7		0.151	0.747	0.898	0.968	0.871	2	Retained
Criteria 8		0.158	0.690	0.861	0.959	0.837	5	Retained
Criteria 9		0.159	0.680	0.854	0.959	0.831	6	Retained
Financial Management Practices	0.0187							

Construct/item	*d*-construct	*d*-value (item)	Average FN			A_{max} Score	Ranking	Decision
Criteria 1		0.178	0.758	0.900	0.963	0.874	2	Retained
Criteria 2		0.146	0.767	0.904	0.971	0.881	1	Retained
Criteria 3		0.212						Discarded
Criteria 4		0.220						Discarded
Criteria 5		0.373						Discarded
Criteria 6		0.331						Rejected
Criteria 7		0.170	0.746	0.892	0.963	0.867	3	Retained
Criteria 8		0.188	0.729	0.892	0.963	0.861	4	Retained
Criteria 9		0.218						Discarded
Criteria 10		0.212						Discarded

** d-value exceeded threshold value > 0.2*

Figure 4: Malaysian Women's Entrepreneurial Resilience Framework



Discussion

This study proposes a framework of entrepreneurial resilience factors and the underlying criteria for Malaysian women entrepreneurs based on expert opinions utilizing the FDM technique. The research is carried out given that understanding precursor to entrepreneurial resilience is crucial to explore the potential enablers in generating resilient women entrepreneurs to bounce back and thrive through a crisis (Duchek, 2018; Qalati et al., 2023; Sultan & Sultan, 2020). Efforts to build resilience capacity for women entrepreneurs can help them manage a crisis and increase the likelihood of leading a successful venture (Duchek, 2018; Karimi et al., 2022).

Using the FDM technique, the study reveals that women's entrepreneurial resilience can be fostered and nurtured suggestively through the lens of experts' views by empowering entrepreneurs' inner strengths, namely psychological and spiritual capital, as well as improving competency domains such as digital literacy and financial management. The insights from this study corroborate with previous studies which supported that antecedents' factors to women's entrepreneurial resilience can be derived from entrepreneurial traits such as resourcefulness, which was confirmed in a study by Matharu and Juneja (2021) and entrepreneurial spirit as supported by Badzaban et al. (2021). More specifically, the findings of this study posit that psychological capital is the most critical entrepreneurial resilience factor, given that two statements in the psychological capital group had obtained the highest experts' group consensus ($A_{max} > 0.900$), which is "*Even when others get discouraged, I know I can find a solution to the problem"* (Criteria 9 with $A_{max} = 0.945$), and "*I actively pursue my goals"* (Criteria 7 with $A_{max} = 0.937$). These statements reinforce the finding of Becker and Kabongo (2020) in developing economies such as Malaysia, signifying virtuous psychological values, such as locus of control, neuroticism, self-efficacy, and self-esteem to aid entrepreneurial resilience.

For instance, the findings of this study also confirmed the previous results by Badzaban et al. (2021) and Junusi and Mubarok (2020), which provide evidence supporting the role of spirituality in enhancing women's entrepreneurial resilience to cope with the COVID-19 pandemic. The experts' consensus is evident in the statement "*I feel God's presence"* (Criteria 1 with $A_{max} = 0.942$) and "*I feel thankful for my blessings*" (Criteria 12 with $A_{max} = 0.920$). Consequently, spiritual factors provide women entrepreneurs the ability to resolve adverse emotional disorders and distrust, particularly in overcoming risks and changes, which is a critical aspect of resilience development. Consistent with a study's view by Lazić et al. (2021), a positively driven personality, be it traits, values, or beliefs, is therefore considered an essential precursor to a positive adaptation to hardship and adversity and serves as a valuable protective asset to ensure crisis resistance among women entrepreneurs to precede success in entrepreneurial pursuit.

The current study also found that network relationships within workplaces and communities shall ensure that physical and mental support is continuous and becomes a catalyst for business support. The experts'

consensus regarding the item's statement "*Relationship with cultural and leisure groups in the community"* (Criteria 5 with A_{max} = 0.802) and "*Relationship with trusted co-workers or fellows*" (Criteria 2 with A_{max} = 0.780), as well as "*Maintain close social circles on social networks*" (Criteria 3 with A_{max} = 0.722) implies the need for women entrepreneurs to remain in strong relationship with these key actors through positive communication and good tolerance with each other's. This is expected as previous studies by Herbane (2019) and James (2000) have highlighted the importance of weak ties in promoting resilience development through activating key resource exchange critical for supporting sustainable entrepreneurial actions. Without reliance on strong social relationships with their environment, it is difficult for women entrepreneurs, who face more hurdles and struggles with several resource limitations than men entrepreneurs, to cope and thrive with unexpected work-life challenges.

Moreover, the experts' consensus in the study is also in parallel with previous findings by Badzaban et al. (2021), which confirm the important aspect of entrepreneurial competencies. Furthermore, the experts' agreement on the antecedent factor of digital literacy practices on promoting resilience capacity to deal with business hardships is also supported by a previous study by Duchek (2018), who addresses the significant aspects of entrepreneurial learning and behaviors to strengthen resilience personality. The FDM's result pertaining to digital literacy practices has conceded that "using social media such as Facebook for business purposes" (Criteria 2 with A_{max} = 0.945) is critical to ensure women entrepreneurs can cope with challenging environments. The finding extends the results of recent studies by Mahdipour (2022) and Shamaki et al. (2022), which argue that women entrepreneurs can overcome gender disadvantages such as market and cultural bias by embracing digital opportunities and transformation to thrive in business challenges.

Similarly, this study posits that financial management practices, particularly with regards to experts' agreement on two statements concerning a behavioral approach to entrepreneurial resilience pathways, "I determine target cash balances" (criteria 2 with A_{max} = 0.881) and "I prepare cash budgets" (criteria 1 with A_{max} = 0.874) have been similarly reported in Karimi et al. (2022). This is because vigilant monetary planning and debt management can influence the ability to overcome economic adversity with sufficient cash flows, as strongly argued by Welsh et al. (2018) and Salignac et al. (2019). In addition, research in OECD countries by OECD (2020)

supports that the fragility of the SME sector and entrepreneurs are due to liquidity problems consistent with the experts' consensus in this study that financial management practices may include such financial monitoring aspect. Although business liquidity problems are a universal problem when a strong crisis occurs, efficient financial practices can mitigate bankruptcy consequences among those with prudent financial management practices.

Conclusion

This study evaluated and validated the key antecedent factors to women's entrepreneurial resilience based on experts' views to help promote a sustainable agenda of harnessing women's entrepreneurship in Malaysia. Specifically, this study proposes a conceptual framework depicting that a woman entrepreneur's psychological and spiritual strength is pertinent in overcoming contingency obstacles to thrive and succeed. Furthermore, the experts' views in the study ascertain that both cognitive and behavioral factors, namely digital literacy practices and financial management practices offer a promising avenue for generating resilient women entrepreneurs capable of facing dynamic atmospheres in the new normal era. Rapid digitalization will intensify business uncertainties and comes with the greatest challenge for a business to thrive, where the antecedents' factors identified in this study should entail resilient capability to cope with challenges.

The study is expected to enrich the understanding of theoretical reasoning of how entrepreneurial resilience at the individual level can be nurtured in advancing women's entrepreneurship, which is seldom discussed in the current literature using expert views. Second, the study responded to a research call on conducting a robust and scientific approach to discover contextual-based entrepreneurial resilience resources which the study has confirmed that both traits and behavioral approaches (i.e., psychological capital, spiritual capital, digital literacy practices, financial management practices) are pertinent factors in developing resilience capability.

The findings of this study also offer practical merits for managerial and policy implications. This study infers important insights on strategies that can be taken to generate resilient women entrepreneurs, suggestively by strengthening individual personal capacities and competencies to improve and stay afloat as an entrepreneur. Significantly, this indirect way can

promote successful women's ventures into sustainable business, as literature has found a positive association between individual resilience and success in entrepreneurial careers. Therefore, in supporting women entrepreneurs in building their resilience capacity, key stakeholders, through various educational programs, can develop and disseminate practical knowledge to ensure women entrepreneurs continuously grow despite adversity.

Nonetheless, the results of this study should be considered with several limitations. First, the context of the study is limited to Malaysian women entrepreneurs; therefore, other parts of economies and cultural differences may not share similar findings. Additionally, the expert panels' views used in the study are mostly academicians with fewer industry representatives, and the findings may potentially deviate in terms of the final aggregation of experts' consensus. Nevertheless, all the academicians in this study are senior officers with significant entrepreneurial research and training experience that equip them with essential theoretical and practical entrepreneurship knowledge.

Future research should further utilize the insights from this study to hypothesize all the antecedents' factors using a sample of women entrepreneurs to ascertain the directions of the relationship using quantitative study (i.e., survey technique). Future studies should also be recommended towards exploring other factors, including the functional role of intrapersonal, interpersonal, and contextual environments (i.e., entrepreneurial passion). The different analyses also can be utilized to advance a deeper understanding of a similar topic, such as the Fuzzy Analytical Hierarchical Process (FAHP), to determine the importance of resilience criteria by assigning weight to each criterion. The previous two years have undeniably been difficult for women entrepreneurs due to the COVID-19 pandemic. Therefore, findings from the study may enact new knowledge and opportunities for policy interventions to boost women entrepreneurs' ability to 'bounce forward' and contribute greatly to the national economy and social building agenda.

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