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Abstract
Fishing is the primary source of income and employment for the community, which is typically located near the fishing area. Women fishermen are pertinent to the family economy because they help to market product-based fisheries, which provide additional income for the household. Furthermore, during the monsoon season, women fishermen play a key role. The purpose of this paper is to revalidate women's participation in the Entrepreneurship Scale using the Fuzzy Delphi Method (FDM). This study indicates that a variety of factors influence women fishermen's participation in entrepreneurship activities. Concerning the recommendation, stakeholders should better understand and encourage women fishermen to become entrepreneurs in order to help raise the living standards of the fishing community.
Keywords: Revalidate, Women's Fishermen, Participation, Entrepreneurship.

Introduction

Peninsular Malaysia and Borneo are geographically separate parts of Malaysia, which is bordered by the South China Sea on most sides. Fishing waters in Malaysia cover about 329,847 km2 from the coast to the demarcation line of the Exclusive Economic Zone (EEZ) (Thirugnana et al., 2020). As a result, the locals have created numerous fishing villages or zones, with fishing communities in each location (Zainudin et al., 2019). A fisherman's wife is a family member. She is a multitasker because of their numerous responsibilities, which include meeting their immediate family's meal demands, assisting their husbands, caring for children, and even managing their family's money each month. Fishermen's wives play an important role in generating household income in addition to these basic tasks. They frequently contribute to the family income by selling their husbands' marine catch at the market every morning, and a small percentage work outside of the fishing industry. Even if a fisherman's wife does not have flexible free time, she can still contribute to the family's supplemental income (Fitrianggraeni, 2019).

Participation of Women in Fishermen Entrepreneurship in Malaysia

According to research conducted in Bachok, Kelantan, women fishermen practiced traditional beliefs and lacked resources, resulting in low participation in entrepreneurial activities. Meanwhile, in Sabah, rural community attitudes, education level, lack of information, insufficient equipment, and poor technology influence their participation in entrepreneurship activities. Furthermore, they rely on government assistance and subsidies to start businesses (Rosazman et al., 2015).

Based on the literature review, there is no specific scale for measuring the participation of women fishermen in entrepreneurship in Malaysia. Thus, we are convinced that a study is required to revalidate the scale that has been reviewed in order for the scale to be employed in the Malaysian context.

The Research Aims

This study will revalidate the women fisherman's participation in the Entrepreneurship Scale using the Fuzzy Delphi Method (FDM).

Methodology

The Fuzzy Delphi Method is explicitly used in this study (FDM). This study was chosen because it offers a novel method for obtaining expert consent in making a specific decision. The elements of the study questionnaire are formed in two stages in this study, namely through a literature review. The first phase of the research will concentrate on literary analysis of the research background as well as relevant experts and their backgrounds (refer to Table 1). The researchers then proposed questionnaires to five experts and analysed them using the Fuzzy Delphi Method (FDM).

Sampling Procedure

Purposive sampling is the most commonly used sampling technique in the Fuzzy Delphi Method (Joanna et al., 2021). Purposive sampling is the most reliable method because it can achieve consensus among experts on relevant and appropriate questions to ask while saving time and money (Yusoff et al., 2021). In this study, the questionnaire addresses which questions about women fishermen's participation in entrepreneurial activities should be asked.

This study included five experts, which is the minimum number required for the Fuzzy Delphi Method to be accepted, i.e. between 3 and 80 participants (Ogbeifun et al., 2016). Table 1 shows the experts' selection criteria, which are based on their profession and experience.

Table 1
List of experts

Expert	Field of expertise	Institution
5 Senior Lecturers	Business Studies	Public university

Expert Criteria

An expert is defined as someone with five to ten years of experience in a specific field (Khalli et al., 2021). According to Mustapha et al (2022a), a person is considered an expert if he or she has sufficient knowledge and extensive experience in the subject matter. As a result, it is

critical to ensure that the questionnaire participants are considered experts; otherwise, the research's acceptability may suffer. Those involved in this study have at least seven years of experience teaching and researching business developments and skills at Universiti Teknologi MARA (UiTM), Malaysia.

Fuzzy Delphi Step

Table 2

Fuzzy Delphi Step

Step	Formulation
1. Expert selection	● A total of 5 experts were included in this report. A panel of experts was assembled to assess the significance of the assessment parameters on the factors to be evaluated using linguistic variables. and definitions of potential problems with the piece, and so on.
2. Determining linguistic scale	● This procedure entails translating all linguistic variables into the counting of fuzzy triangles (triangular fuzzy numbers). This move also includes the addition of fuzzy numbers to the translation of linguistic variables (Hsieh et al., 2004). The Triangular Fuzzy Number represents the values m1, m2, and m3 and is written as follows (m1, m2, m3). The value of m1 represents the smallest possible value, the value of m2 represents a rational value, and the value of m3 represents the highest possible value. While Triangular Fuzzy Number is used to generate Fuzzy Scale for the purpose of converting linguistic variables into fuzzy numbers.
3. The Determination of Linguistic Variables and Average Responses	● Once the researcher has gained input from the specified experts, the researcher must convert all measurement findings to Fuzzy scales. This is often recognized as the acknowledgment of each answer (Benitez et al., 2007).
4. The determination of threshold value "d"	● The threshold value is crucial in determining the degree of agreement among experts (Thomaidis, Nikitakos & Dounias, 2006). The distances for each fuzzy integer m = (m1, m2, m3) and n = (m1, m2, m3) are determined using the formula:

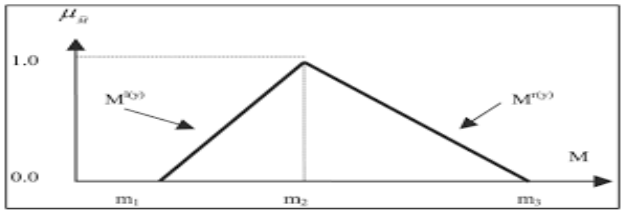

Figure 1: Triangular fuzzy number

	$d(\bar{m},\bar{n}) = \sqrt{\frac{1}{3}[(m1-n1)^2 + (m2-n2)^2 + (m3-n3)^2]}$
5. Identify the alpha cut aggregate level of fuzzy assessment	● If experts consensus is reached, a fuzzy number is assigned to each piece (Mustapha & Darussalam, 2017). The below is the approach for calculating and measuring fuzzy values: (1) 4 (m1 + 2m2 + m3) Amax
6. Defuzzification process	● This process uses the formula Amax = (1)⁄4 (a1 + 2am + a3). If the researcher uses Average Fuzzy Numbers or average response, the resulting score number is a number that is in the range 0 to 1 (Ridhuan et al.2014). In this process, there are three formulas namely: i. A = 1/3 * (m1 + m2 + m3), or; ii. A = 1/4 * (m1 + 2m2 + m3), or; iii. A = 1/6 * (m1 + 4m2 + m3). A-cut value = median value for '0' and '1', where α-cut = (0 + 1) / 2 = 0.5. If the resulting A value is less than the α-cut value = 0.5, the item will be rejected because it does not indicate an expert agreement. According to Bojdanova (2006) the alpha cut value should exceed 0.5. It is supported by Tang & Wu (2010) who stated that the α-cut value should be more than 0.5.
7. Ranking process	● The positioning process is carried out by means of defining elements based upon values of defuzzification based on expert agreement that the element with highest importance is the most important place for decision (Fortemps & Roubens, 1996)

Instrumentation

On a 7-point scale, ten questions will be proposed. The 7-point scale was chosen because the more scales used, the more precise and perfect the results (Mustapha et al., 2022b). The researcher changed the Fuzzy value in Table 2 to a 1-7 scale value to make it easier for experts to respond to the questionnaire, as shown:

Table 3
Fuzzy Scale

Item	Fuzzy number
Strongly disagree	(0.0, 0.0, 0.1)
Disagree	(0.0, 0.1, 0.3)
Somewhat Disagree	(0.1, 0.3, 0.5)
Neutral	(0,3, 0.5, 0.7)
Somewhat agree	(0.5, 0.7, 0.9)
Agree	(0.7, 0.9, 1.0
Strongly agree	(0.9, 1.0, 1.0)

The Factors Influencing Women Fishermen's Entrepreneurship Participation

Researchers highlighted the factors which influence the participation of Women Fisherman in Entrepreneurship. The researchers will next use the Fuzzy Delphi approach to determine the validity and consensus of the experts on whether this aspect is appropriate for inclusion in this model.

Table 4
The List of Factors Influencing Women Fishermen's Entrepreneurship Participation

	Early item rank	The Factors Influencing Women Fishermen's Entrepreneurship Participation
The Factors Influencing Women Fishermen's Entrepreneurship Participation	1	Why did you start your own business?
	2	What were the challenges you faced during the start-up phase in your business?
	3	Have you ever thought of giving up business at one point?
	4	What kept you going forward with your business?
	5	Do you think the troubles you went through were worth it today?
	6	How well is your business operating currently?
	7	Rate your level of happiness as a women entrepreneur.
	8	Please indicate your response up to what extent do you agree on how difficult it is to balance professional and family life.
	9	Are your family members such as husband and/or children happy with the business you are running?
	10	Do you agree with the fact women are able to balance both domestic and professional life?

Findings

This section will provide expert consensus on the factors that lead to women's participation in entrepreneurship. The Fuzzy Delphi questions were presented to five experts in the relevant fields, and the results were compiled based on their responses. The study's findings are as follows:

Table 5
The Analysis Result

Results	Item1	Item2	Item3	Item4	Item5	Item6	Item7	Item8	Item9	Item10
Expert1	0	0.01155	0.02309	0.01155	0.28868	0.13856	0.38105	0.10392	0.02309	0.02309
Expert2	0	0.01155	0.08083	0.06928	0.11547	0.02309	0.09238	0.06928	0.02309	0.02309
Expert3	0	0.04619	0.02309	0.01155	0.05774	0.09238	0.13856	0.01155	0.02309	0.03464
Expert4	0	0.01155	0.08083	0.10392	0.05774	0.09238	0.1963	0.01155	0.03464	0.02309
Expert5	0	0.01155	0.20785	0.01155	0.05774	0.02309	0.13856	0.01155	0.03464	0.03464

Statistics	Item 1	Item 2	Item3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item10
Value of the item	0	0.01848	0.08314	0.04157	0.11547	0.07 39	0.18937	0.04157	0.02771	0.02771
Value of the construct										0.06189
Item < 0.2	5	5	4	5	4	5	4	5	5	5
% of item < 0.2	100 %	100%	80%	100%	80%	100 %	80%	100%	100%	100 %
Average of % consensus										94
Defuzzification	1	0.98	0.86	0.88	0.8	0.74	0.66	0.88	0.94	0.96
Ranking	1	2	6	5	7	8	9	5	4	3
Status	Accept	Accept	Accept	Accept	Accept	Accept	Accept	Accept	Accept	Accept

According to the analysis results, the bold threshold value exceeds the 0.2 threshold value after data processing (> 0.2). (see table 5). To put it another way, there are experts whose points of view do not coincide or even agree on some issues. The average threshold value (d) 0.2, or 0.06189, for all factors influencing women fishermen's entrepreneurship participation, on the other hand, is less than 0.2. If the average (d) value is less than 0.2, the item has a high level of expert agreement (Chang, Hsu & Chang, 2011). Meanwhile, the total percentage of expert agreement is 94%, which is greater than (> 75% of) 94%, indicating that the expert agreement requirements on this item have been met.

Table 6
The list based on expert consensus

	Early item rank	New item rank	The Factors of Women Fisherman Participation in Entrepreneurship
Factors of Women Fisherman Participation	1	1	Why did you start your own business?
	2	2	What were the challenges you faced during the start-up phase in your business?
	3	6	Have you ever thought of giving up business at one point?
	4	5	What kept you going forward with your business?
	5	7	Do you think the troubles you went through were worth it today?
	6	8	How well is your business operating currently?
	7	9	Rate your level of happiness as a women entrepreneur.
	8	5	Please indicate your response up to what extent do you agree on how difficult it is to balance professional and family life.
	9	4	Are your family members such as husband and/or children happy with the business you are running?
	10	3	Do you agree with the fact women are able to balance both domestic and professional life?

Conclusion and Suggestions

Women's entrepreneurship is a worldwide phenomenon that is increasing household income and living standards. As a result of its significant contribution to the betterment of the community, it provides a valuable focus for collaborative scholarly research. Despite their contributions to poverty reduction, women, particularly those from rural areas, such as female fishermen, face a number of barriers that prevent them from engaging in entrepreneurial activities. Based on the findings of the study above, we can see that a variety of factors influence women fishermen's participation in entrepreneurship activities. This issue needs to be given full attention by all stakeholders, especially the government, to help women fishermen generate more side income for their families. More understanding from all stakeholders will boost the effort to improve the living standards of the fishing community. The recommendations that the researcher suggests are as follows:

a) The government should provide business capital to encourage women fishermen to participate.
b) Expand the entrepreneurship program among women fishermen as a means of combating poverty in the fishing community.
c) Enhance the professionalism and competencies of the respective officer.
d) Conduct leadership workshops and seminars.
e) Organize a government and non-governmental organization (NGO) outreach program for women fishermen.
f) Encourage the practice of shareholding in entrepreneurship projects to ensure full commitment among women fishermen.
g) Consult with and share knowledge with women fishermen about balancing economic activities, self-management, and household management.

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