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Applying the Fuzzy Delphi Method to the Content Validity of the Female Leadership Personality Instrument

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Abstract

The number of female decision-makers in the public sector level remains low, suggesting that Malaysia's current policy to ensure that both the government and private sectors maintain their workforce with at least 30% female decision-makers, has not been achieved. Female personalities and behaviors that do not meet the cultural standards of strong leadership contribute to the lack of female representation in decision-making departments. Therefore, to meet the goal of 30% female decision-makers, a suggested strategy is to build an instrument that can help women identify standard leadership personality characteristics to meet those standards. In the process of building the instrument, the items need to be measured to confirm that they represent the correct characteristics. Therefore, this study, which was conducted from October to November 2020, uses the Fuzzy Delphi Method (FDM) to obtain the consensus of experts when determining the relevant items to measure the personality traits of female decision-makers, namely, their influence, charisma, pro-activeness, assertiveness, vision, integrity, fairness, and risk-taking. A total of 14 expert panelists were involved in this study and all data collected were analyzed using the Fuzzy Delphi method. The analysis showed that a total of 59 items met all the requirements: threshold value (d) ≤ 0.2, α-cut value ≥ 0.5 and agreement percentage of more than 75%. This instrument could help select female leaders for decision-making positions according to traits and characteristics, and contribute to the innovation of the FDM in assessing content validity for items that measure constructs, particularly female leadership traits.

Keywords: Women's leadership, personality traits, fuzzy Delphi method (FDM), content validity, expert consensus.

1. Introduction

Women are the pillars that strengthen a country's development and progress agenda. Given their importance, the Malaysian government set a target of women holding 30% of the top management decision- or policy-making positions in both the government and private sectors

(Fiscal and Economic Division 2016). This initiative shows the resolution of the government in systematically and effectively increasing the participation of women policymakers and decision-makers. However, efforts to empower women as decision-makers in the public sector are still lacking, as observed in Malaysia in 2020, where only 15.6% of ministerial and deputy ministerial posts are held by women. A study in Brazil showed similar findings; even though there are women representatives in top management positions, the percentage of female decision-makers is only 4.5% (Hryniewicz and Vianna 2018). Women have the right to be leaders or policymakers. To ensure that the gender equality goal is achieved, the presence of women at the decision-making stage, especially in the government sector, is essential. This is because a female representative at the government leadership level can enhance performance and bring benefits to all walks of life, while reducing discrimination against women (UN Women 2020, Khadri and Subramaniam 2015). For example, while the world struggled against the COVID-19 pandemic, countries with women leaders such as Denmark, Finland, Iceland, New Zealand, Germany, and Slovakia received international recognition for their quick and effective efforts in keeping the epidemic under control (Piscopo and Och 2020).

The implementation of the policy of 30% women representation as decision-makers in Malaysia has undeniably increased the number of women leaders, especially at the management level. The percentage of women representatives in top level management increased from 19.2% in 2009 to 37.3% in 2020 (Policy and Strategic Development Division 2020). However, the number of female representatives at the highest ministerial leadership level remains disproportionately favors men, even though the number of female civil workers is higher than that of men. As of 2019, Table 1 indicates that there are a total of 737,560 (67.80%) female civil servants in the management and professional divisions (Grades 1-54). However, at the top management levels (Grade Jusa C and above), there are only 1,511 (37.3%) female officers out of 4,052 total positions (Policy and Strategic Development Division 2020). Among 45 chief secretaries and directors-general, only 9 (20%) are women (Prime Minister Department of Malaysia 2020).

Table 1 Number of Malaysian women government servants 2019

	Male	Female	Total	Female (%)
Top Management (Grade Jusa C and above)	2,541	1,511	4,052	37.3
Professional & Management (Grade 41-54)	174,555	343,206	517,761	66.3
Support (Grade 1-40)	349,168	394,354	743,522	53.0

The literature review indicates that the female personality is one aspect that prevents women from holding leadership positions. For women to be given the opportunity to be leaders, they need to display masculine personality traits (assertive, independent, and dominant) and reduce their feminine traits (shy, soft-spoken, loving, and naive) that are considered obstacles in organizational leadership (Moore 1999, Moore and Gobi 1995, Bala Subramaniam et al. 2016). Hence, to be a leader, women are required to display masculine and feminine traits known as an “Androgynous Identity,” which combines both (male traits—dominant, assertive, and competitive—and female traits— collaborative, cooperative, and caring) (Eagly and Carli 2003, Bala Subramaniam et al. 2016). However, female officers rarely possess the full combination of these traits. Furthermore, Malaysian society views women as stereotypically passive and overly emotional, making it difficult for them to take professional decisions. This results in decision-maker positions being awarded to male leaders as they are perceived to be synonymous with self-confidence and less emotional (Carli and Eagly, 2016).

Therefore, to work toward the policy aim of 30% female decision-makers, an instrument to measure the female decision-maker personality traits according to Malaysia's context is needed. The study aims to identify the main traits that female leaders possess. With this instrument, reinforcement efforts to strengthen these traits among women can be implemented by respective parties. Previous studies show that there is no standard instrument to measure the personality traits of female decision-makers. Hence, to develop this instrument, the Fuzzy Delphi Method (FDM) was used, as it is one of the best methods for obtaining consensus among experts in determining the elements that can be included in the instrument (Hasan et al. 2017). It is a modification method derived from the former classical Delphi method developed by two scientists, Olaf Holmer and Norman Dalkey, and is widely used to obtain expert opinions through surveys (Hsu et al. 2010). The method's specialty lies in its reliability, given the variation of human opinion, and the fact that it can be administered remotely and without direct interaction (Bourgeois et al, 2006). It is best used for the relatively simple evaluation of new products and developments; however, it is one of the most complex methodologies available. Other disadvantages include the possible misinterpretation of expert opinions due to lack of clarity, lack of dedicated rules to deliver the desired outcome, and loss of expert interest and data due to its time-consuming process, which can lead to repeated surveys and ultimately make the study more expensive (Adler and Ziglio 1996, Sánchez-Lezama et al. 2014, Skulmoski et al. 2007). Given the importance of resolving the ambiguity among experts who might not share a common understanding (Sánchez-Lezama et al. 2014), the FDM was introduced more than three decades ago (Murray et al. 1985) and has been revised by later scholars (Kaufman and Gupta 1988, Alias et al. 2015) to simplify and address its shortcomings. According to expert consensus, the FDM is equivalent to the Delphi technique in ensuring transparency, regulatory feedback, and the analysis of group statistics (Abdullah and Yusof 2018).

Several studies from different fields have successfully applied the FDM. For example, it has been used to, ascertain the probability of third party failure related to the onshore transmission pipeline in the Niger Delta region of Nigeria (Ariavie and Ovuworie 2012); determine the socio-ecological factors that influence adherence to mammography screening in the rural areas of Mexico (Sánchez-Lezama et al. 2014); provide a framework for the marine space stakeholders in marine engineering (Abdullah et al. 2015); forecast and screen items (Habibi et al. 2015); design guidelines on the learning psychology of the use of Facebook (FB) as a medium for teaching and learning in secondary school (Noh et al. 2015); validate the content of a pesticide applicator's questionnaire (Manakandan et al. 2017); and to develop high-performance leadership (Abdullah and Yusof 2018).

The FDM approach has been widely used and adopted for collecting data supported by the collective agreement of experts on the subject of studies (Hsu and Sanford 2007). Another strength of this method is its diversification of techniques in obtaining empirical data. Besides obtaining expert consensus in research, the FDM has also been applied to "real life" situations. Examples include, the application of FDM for a review of the benefits of using value engineering in information technology project management (Tohidi 2011); as an identification method of synergy in Railway Material Management (Pu and Tianyun 2015); the construction of a light rail transit assessment index (Dong and Hsu 2018), the selection of COPD risk factors among steel industry workers (Dapari et al. 2017); the identification of mental health elements among technical university students (Pua et al. 2017); for the recognition of critical factors affecting university-industry collaboration (Mosayebia et al. 2020); and in the selection of green suppliers for developing a sustainable supply chain (Mabrouk 2021).

The FDM helps reduce survey rounds and increase item recovery rates, allowing experts to express their opinions without ambiguity bias, which enhances the consistency of opinions (Mohd Jamil et al. 2017). It also enables consensus from experts without jeopardizing their original opinions, and allows for their genuine reactions to the questions to be recorded (Noh et al. 2013). Moreover, this method reduces the cost and time required to analyze each item in a research instrument (Ariffin et al. 2018, Mustapha and Darusalam 2018) and is therefore considered an appropriate tool for determining content validity, especially for the development of new research instruments. The FDM analysis applied in this study aims to obtain expert panel consensus on items that measure the personality traits of female leaders-turned-decision-makers and identify rankings for each element corresponding to their personality trait constructs based on expert panel consensus.

2. Design and Methodology

2.1. Study design

This study has a quantitative design that applies the discussed FDM to obtain expert consensus on the personality traits of female leaders-turned-decision-makers and to determine the rankings of the items in their personality trait constructs. A total of eight sub-constructs and 56 items were developed for the questionnaire. The sub-constructs represent female decision-makers' personality traits: i) influence, (ii) charisma, (iii) pro-activeness, (iv) assertiveness, (v) vision, (vi) integrity (vii) fairness, and (viii) risk-taking. The determination of the leader's personality traits includes the context, cultural needs, and norms in Malaysia. Table 2 describes the details of the constructed questionnaire items regarding the personality traits of female decision-makers.

Table 2 Number of items for personality trait construct

Construct	Sub-Construct	Number of Items
Personality Traits	Influence	7
	Charisma	5
	Pro-activeness	8
	Assertiveness	7
	Vision	6
	Integrity	7
	Fairness	7
	Risk-taking	9
	Total Items	56

2.2. Panel of experts

Ocampo et al. (2018) agree that there is no need to include a large number of experts in a study because there are no strong relations between the number of experts and the quality of results produced from group discussions. Thus, the researchers selected 14 experts based on the recommendations of Adler and Ziglio (1996) and Jones and Twiss (1978). Adler and Ziglio (1996) argue that between 10 and 15 experts are appropriate if their uniformity is high. Jones and Twiss (1978) suggested that in the Delphi study there should be 10 to 50 experts who are selected for their background or experience in the field related to the study under investigation. This selection can reinforce their opinion on the study question and help review their initial judgment to reach a consensus among the experts (Pill 1971). This is because, according to Saaty and Özdemir (2014), an increase in the number of inexperienced experts can weaken the results' accuracy.

This study used purposive sampling to obtain expert consensus. This sampling method is suitable for use as proposed by Hasson et al. (2000) and is the most appropriate method used in conjunction with the FDM. The panel of experts are from various parts of Malaysia. According to Rubio et al. (2003) two kinds of experts are appointed, professional experts and lay experts, to study the items developed to ensure content validity. A total of seven professional experts and seven lay experts were assigned, both groups comprising five leaderships and two psychometric experts. The selection of professional experts was based on (i) the highest academic qualifications (Doctor of Philosophy) in their respective fields, (ii) service (university/department), (iii) experience in the field of more than 15 years, and (iv) agreeing to be involved throughout the instrument evaluation process. Additionally, the seven lay experts for this study were selected based on (i) period of service exceeding 20 years, (ii) still in service (ministry/department), and (iii) holding the highest position in an organization. They were contacted by the researcher via a phone call to brief them on FDM and to obtain their verbal informed consent. A set of 60 questionnaire items was distributed to each expert via email between October and November 2020.

2.3. Data analysis using the fuzzy Delphi method

The process of collecting and analyzing data with the fuzzy Delphi technique was conducted in two stages. The first stage was carried out when the expert was given an item from the instrument with a blank space for their feedback and suggestions. The Likert scale data obtained were then analyzed using Excel for tidy and systematic scheduling by following the steps put forward by Chang et al. (2000), and Mohd Jamil and Noh (2020). The steps are as follows:

Step 1: To apply the FDM, the experts involved agreed to contribute ideas, criticize, and improve the content of the proposed items. The experts were also asked about their level of agreement/approval for each item, as shown in Table 3. After every expert indicated their level of agreement, they were asked to provide feedback to improve the questionnaire items. Every expert opinion and suggestion was considered.

Table 3 Fuzzy five-point scale

Level of Agreement	Fuzzy Scale	Likert Scale
Strongly Disagree	0.0, 0.0,0.2	1
Disagree	0.0, 0.2,0.4	2
Moderately Agree	0.2, 0.4,0.6	3
Agree	0.4, 0.6,0.8	4
Strongly Agree	0.6, 0.8,1.0	5

Source: Mohd Jamil and Noh (2020)

Step 2: All linguistic variables are converted to the numbering of a fuzzy triangle (triangular fuzzy number), as Table 3 shows. The triangular fuzzy number is arranged with values of m1, m2, and m3, and is usually shown in the form (m1, m2, m3). The value of m1 represents the minimum value, the value of m2 represents the acceptable value, while the value of m3 represents the maximum value. The triangular fuzzy number is used to produce a fuzzy scale (the same as a Likert scale) for interpreting linguistic variables as fuzzy numbers. The number of levels of agreement or level for the fuzzy scale is odd. The higher the fuzzy scale, the more accurate the data obtained. This is shown in Figure 1.

Step 3: Next, the data is scheduled to obtain the values (n1, n2, n3) as well as the fuzzy average values (m1, m2, m3) to obtain threshold values, expert consensus percentage, defuzzification, and item ranking. The threshold value obtained must not exceed 0.2 to obtain expert consensus for each item, and the percentage of experts in agreement must exceed 75%. Next, the defuzzification value for each item must exceed α-cut = 0.5. The threshold value is obtained from the calculation of the distance between two fuzzy numbers using the following formula:

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

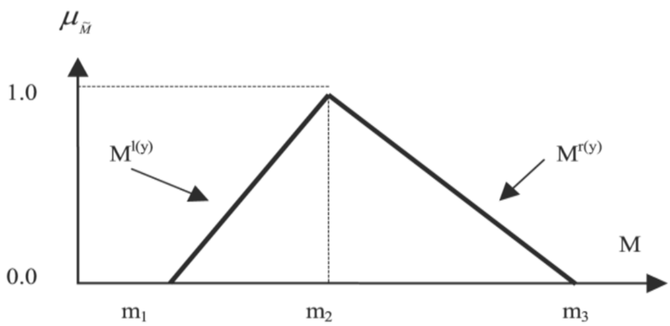

Figure 1 Fuzzy scale approval level

Based on the formula, d is the threshold value. A value of d ≤ 0.2 means that all experts reached a consensus or agreement on the item. If not, a second round is needed to see if the item should be kept (Chen 2000, Cheng and Lin 2002).

Step 4: The FDM also involves determining if the expert agreement or consensus is ≥ 75% for the entire construct or each item. Each item is assumed to reach an agreement if the expert agreement percentage for the item is ≥ 75% (Murray and Hammons 1995, Chu and Hwang 2008).

Step 5: Aggregate the fuzzy assessment using the following formula:

$$\tilde{A} = \begin{bmatrix} \tilde{A}_1 \\ \tilde{A}_2 \\ \vdots \\ \tilde{A}_m \end{bmatrix}_{i=1,\ldots,m} \quad \tilde{A}_i = \tilde{r}_{i1} \otimes \tilde{w}_1 \oplus \tilde{r}_{i2} \otimes \tilde{w}_2 \oplus \cdots \oplus \tilde{r}_{in} \otimes \tilde{w}_{n'}.$$

Step 6: The Defuzzification process is the final step in the FDM analysis. It determines the position or priority of each item or the position of each variable or sub-variable. In this process, the formula used is as follows:

i. $Amax = 1/3 * (m_1 + m_2 + m_3)$.

The α-cut value is the 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 as it shows that the expert agreement rejects the item; however, if the resulting A value is more than the α-cut value = 0.5, the item will be accepted because it shows that the expert consensus is to accept the related item (Tang and Wu 2010, Bodjanova 2006). Table 4 shows the triangular fuzzy number and defuzzification process for charisma sub-constructs.

3. Analysis and Results

Table 5 shows the expert agreement analysis findings for each of the 56 items according to the specified sub-construct. This data consists of a threshold value (d) for each item, threshold value (d) of sub-constructs, and the item position based on the expert consensus. Table 5 shows that nine items were dropped—namely TP1, TA2, TA5, TT3, TI1, TD6, TR3, TR4, and TR5—because they did not meet the first condition, which was that the value of (d) ≤ 0.2 (Chen 2000, Cheng and Lin 2002), and the second condition was that the percentage of expert agreement should be ≥ 75% (Murray and Hammons 1995, Chu and Hwang 2008). Finally, the number of items accepted for this trait construct was 47.

The panel of experts agreed with the items representing influence, charisma, pro-activeness, assertiveness, vision, integrity, fairness, and risk-taking as items that could measure the personality trait sub-constructs among female decision-makers. The analysis results also show that women require masculine traits such as assertiveness. This further strengthens the findings of a study conducted by Piscopo and Och (2021) that female leaders are seen as effective leaders when they have a combination of feminine and masculine traits.

4. Discussion

Overall, the experts agreed that the priority position was arranged based on the overall agreement percentage of the sub-construct as shown in Table 6. The visionary sub-construct came in first place with 98.81%, while the sub-construct of fairness was in eighth place with an expert agreement percentage of 88.08%.

Based on the analysis of the experts' agreement using the FDM, it can be summarized that all elements in the personality traits of female leaders-turned-decision-makers were essential and can be used to guide policymakers or non-governmental organizations in providing training and modules developing female leaders. The findings of this study reflected on why the existing policy did not achieve the level of 30% for female decision-makers in Malaysia considering factors such as lack of fit between the support offered by social institutions (workplace, community) and the demands of families (Lim et al. 2013). In addition, the study conducted by Khadri and Subramaniam (2015) stated that one of the factors that can be attributed to indiscernible delays in women's progression to top management is the issue of a glass ceiling. This issue involves demographic factors, family commitment and support, negative stereotypes, workplace arrangements, organizational culture, and career development opportunities. Thus, one hopes that the development of this research instrument will inform planning training programs to meet the needs of female leaders, especially in relation to skills development and leadership traits of female decision-makers.

Table 4 Triangular fuzzy number and defuzzification process for charisma sub-constructs

Triangular fuzzy numbers from experts recorded responses, n	CHARISMA														
	TK1			TK2			TK3			TK4			TK5		
	n1	n2	n3	n1	n2	n3	n1	n2	n3	n1	n2	n3	n1	n2	n3
1	0.4	0.6	0.8	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1
2	0.2	0.4	0.6	0.4	0.6	0.8	0.4	0.6	0.8	0.4	0.6	0.8	0.6	0.8	1
3	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.4	0.6	0.8	0.4	0.6	0.8
4	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1
5	0.6	0.8	1	0.6	0.8	1	0	0.2	0.4	0.6	0.8	1	0.6	0.8	1
6	0.4	0.6	0.8	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1
7	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.4	0.6	0.8	0.6	0.8	1
8	0.4	0.6	0.8	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1
9	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1
10	0.4	0.6	0.8	0.4	0.6	0.8	0.4	0.6	0.8	0.4	0.6	0.8	0.6	0.8	1
11	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1
12	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1	0.6	0.8	1
13	0.4	0.6	0.8	0.6	0.8	1	0.6	0.8	1	0.4	0.6	0.8	0.6	0.8	1
14	0.4	0.6	0.8	0.4	0.6	0.8	0.4	0.6	0.8	0.4	0.6	0.8	0.4	0.6	0.8
Average of fuzzy number	0.486	0.686	0.886	0.557	0.757	0.957	0.514	0.714	0.914	0.514	0.714	0.914	0.571	0.771	0.971
	m1	m2	m3	m1	m2	m3	m1	m2	m3	m1	m2	m3	m1	m2	m3
Defuzzification Process $A_{max} = (m_1+m2+m3)/$	0.686			0.757			0.714			0.714			0.771		
Item ranking	5			2			3			3			1		

Table 5 Personality traits sub-constructs among female leaders-turned-decision-makers

Sub-construct/ Item	Threshold value (d) ≤ 0.2	Expert Agreement Percentage (%)	Average Fuzzy Number	Position	Result
Influence	0.160	94.07	0.717		
TP1	0.271	64.3%	0.548	8	Rejected
TP2	0.168	92.9%	0.714	4	Accepted
TP3	0.196	85.7%	0.700	6	Accepted
TP4	0.140	100.0%	0.729	3	Accepted
TP5	0.125	100.0%	0.743	1	Accepted
TP6	0.196	92.9%	0.671	7	Accepted
TP7	0.137	92.9%	0.743	1	Accepted
Charisma	0.138	97.16	0.728		
TK1	0.175	92.9%	0.686	5	Accepted
TK2	0.103	100.0%	0.757	2	Accepted
TK3	0.187	92.9%	0.714	3	Accepted
TK4	0.150	100.0%	0.714	3	Accepted
TK5	0.075	100.0%	0.771	1	Accepted
Pro-activeness	0.165	95.25	0.705		
TA1	0.150	100.0%	0.714	2	Accepted
TA2	0.321	71.4%	0.619	7	Rejected
TA3	0.175	92.9%	0.700	6	Accepted
TA4	0.150	100.0%	0.714	1	Accepted
TA5	0.218	35.7%	0.600	8	Rejected
TA6	0.187	85.7%	0.714	4	Accepted
TA7	0.175	92.9%	0.700	3	Accepted
TA8	0.150	100.0%	0.686	5	Accepted
Integrity	0.167	91.66	0.707		
TT1	0.187	85.7%	0.714	3	Accepted
TT2	0.140	100.0%	0.729	2	Accepted
TT3	0.218	28.6%	0.600	7	Rejected
TT4	0.187	85.7%	0.714	4	Accepted
TT5	0.196	85.7%	0.671	5	Accepted
TT6	0.187	92.9%	0.657	6	Accepted
TT7	0.103	100.0%	0.757	1	Accepted
Visionary	0.094	98.81	0.762		
TB1	0.075	100.0%	0.771	1	Accepted
TB2	0.112	92.9%	0.757	4	Accepted
TB3	0.103	100.0%	0.757	4	Accepted
TB4	0.075	100.0%	0.771	1	Accepted
TB5	0.075	100.0%	0.771	1	Accepted
TB6	0.125	100.0%	0.743	6	Accepted

Table 5 (Continued)

Sub-construct/ Item	Threshold value (d) ≤ 0.2	Expert Agreement Percentage (%)	Average Fuzzy Number	Position	Result
Integrity	0.145	91.68	0.736		
TI1	0.171	85.7%	0.729	4	Accepted
TI2	0.274	71.4%	0.643	7	Rejected
TI3	0.171	85.7%	0.729	4	Accepted
TI4	0.112	92.9%	0.757	1	Accepted
TI5	0.103	100.0%	0.757	1	Accepted
TI6	0.137	92.9%	0.743	3	Accepted
TI7	0.175	92.9%	0.700	6	Accepted
Fairness	0.183	88.08	0.574		
TD1	0.200	85.7%	0.686	3	Accepted
TD2	0.196	85.7%	0.671	4	Accepted
TD3	0.187	85.7%	0.657	5	Accepted
TD4	0.196	85.7%	0.700	2	Accepted
TD5	0.125	100.0%	0.743	1	Accepted
TD6	0.240	71.4%	0.643	6	Rejected
TD7	0.196	85.7%	0.671	7	Accepted
Risk-Taking	0.166	91.65	0.717		
TR1	0.137	92.9%	0.743	1	Accepted
TR2	0.200	85.7%	0.686	7	Accepted
TR3	0.137	92.9%	0.743	1	Accepted
TR4	0.306	14.3%	0.600	8	Rejected
TR5	0.274	71.4%	0.643	3	Rejected
TR6	0.274	64.3%	0.557	9	Rejected
TR7	0.200	92.9%	0.686	6	Accepted
TR8	0.168	92.9%	0.714	5	Accepted
TR9	0.156	92.9%	0.729	3	Accepted

Table 6 Priority position for sub-construct according to expert agreement

Position	Sub-Construct	Agreement Percentage (%)	Fuzzy Score (A)
1	Vision	98.81	0.762
2	Charisma	97.16	0.728
3	Pro-activeness	95.25	0.705
4	Influence	94.07	0.717
5	Integrity	91.68	0.736
6	Assertiveness	91.66	0.707
7	Risk-Taking	91.65	0.717
8	Fairness	88.08	0.574

5. Conclusion

Using the FDM analysis, items that received expert consensus were successfully determined. Furthermore, the findings support that the proposed traits meet the needs and characteristics of female decision-makers. With these traits being listed and made available, policymakers can be guided, especially during the evaluation or selection process for female employees to fill decision-making positions. Therefore, personality trait research is relevant because a strong personality and character are crucial in establishing effective organizations and leadership (Maxwell 1999).

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