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Using the Fuzzy Delphi Technique to Develop the Components of a Holistic Rehabilitation Model for the Hijrah Fitrah Community (M-PHKHF)

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Abstract: *This study aims to develop components of a Holistic Recovery Model for the Hijrah Fitrah Community (M-PHKHF), a framework assisting the rehabilitation of individuals in the LGBT community desiring a return to fitrah. Applying the Fuzzy Delphi Method (FDM) involving 21 experts, this study identified key components of the model based on expert consensus (threshold value $d \leq 0.2$; expert agreement ≥ 75%). The result reveals four main components—Government, NGOs, Community Groups, and the LGBT Community—with validated sub-elements. The study further applies Interpretive Structural Modeling (ISM) to analyze the interrelationship among components. This model provides theoretical and practical implications for holistic rehabilitation efforts in Malaysia.*

Keywords: *Fuzzy Delphi Method; Rehabilitation Model; Hijrah Fitrah Community; LGBT; Malaysia*

INTRODUCTION

The issue of gender confusion is increasingly receiving attention in Malaysia. In contrast to many Western countries where this phenomenon is normalized—sometimes even celebrated through the legalization of same-sex marriages—Malaysia retains its strong adherence to religion and cultural traditions across ethnicities. The issue of Lesbian, Gay, Bisexual, Transgender/Transsexual (LGBT) is not new in Malaysia. Its presence has been noted since the early 1980s, notably with the emergence of mak nyah (transwomen) and pondan (effeminate men) (Haridi et al., 2016).

Malaysian society was further stirred by movements championing freedom and human rights, particularly those advocating for LGBT recognition. As Renn (2007) documented, this humanitarian push found strong proponents, such as Ambiga Sreenevasan, dubbed the "Iron Woman" for her relentless activism. Her recognition includes the International Woman of Courage award (Ryan et al., 2010) and France's Chevalier de Legion d'Honneur. However, her vocal support for LGBT rights in Malaysia starkly contrasts with the country's socio-religious values. Rodríguez (2023) highlighted that in Muslim-majority societies, the friction between religious norms and global LGBT advocacy often manifests in moral and legal conflicts.

Ambiga's activism, alongside support from groups like G25, has drawn criticism for allegedly undermining Islamic teachings (Jodi & Haridi, 2018). Figures like Farida Ariffin have echoed calls for LGBT rights under the banner of freedom (Renn, 2010). Meanwhile, Papilaya (2016) characterized LGBT tendencies as a social illness warranting legal sanctions, referencing Islamic hadiths that classify same-sex acts as zina (adultery). In line with this stance, Malaysia's Syariah Criminal Offences (Federal Territories) Act 1997 criminalizes sodomy, musahaqah, and cross-dressing for immoral purposes.

Despite legal barriers, international pressure persists. COMANGO's submission during the 2013 Universal Periodic Review (UPR) by the UN Human Rights Council called for Malaysia to:

i. Accept Sexual Orientation & Gender Identity (SOGI) rights;
ii. Amend Section 377A of the Penal Code;
iii. Repeal restrictive Syariah Criminal Offences Enactments.

Rodríguez (2023) asserts that these international advocacy efforts often clash with the moral fabric of Malaysian society, creating sociopolitical tension. Efforts to address LGBT issues holistically are evident in government initiatives, such as the 2015 JAKIM Focal Point Conference, aiming to refine

action plans against gender disorder. NGOs like USFI, PINTAS, and INSAF have organized rehabilitative programs for individuals seeking a return to fitrah (Haridi et al., 2016).

Holistic rehabilitation, guided by methodologies like the Fuzzy Delphi Technique, ensures interventions are culturally appropriate and endorsed by experts. As demonstrated in research on Islamic youth identity (Peuradeun, 2024), the method facilitates structured consensus and supports the creation of effective models. Rehabilitation should integrate physical, psychological, social, and spiritual dimensions (Ayadi et al., 2020; Mlenzana et al., 2013).

Comprehensive rehabilitation strategies require acknowledging the community's cultural context, integrating psychosocial support systems, and ensuring interventions resonate with local beliefs (Nweke & Eze, 2019; Harada et al., 2022). In this light, a holistic model for LGBT rehabilitation could foster social reintegration, spiritual realignment, and community resilience. Religiously, Malaysia views LGBT behavior as inconsistent with Islamic moral teachings, reinforcing societal rejection and legal penalties (Human Dignity Trust, 2024). Although recent judicial rulings, such as Nik Elin Zurina v. Kelantan (2024), have spurred debates on constitutional rights, prevailing norms continue to marginalize LGBT individuals.

The Malaysian LGBTQ+ discourse intertwines legal, social, and health dimensions. Stigmatization profoundly impacts mental health, as studies show a strong link between societal rejection and psychological distress (Ramasamy et al., 2023). The lack of culturally sensitive healthcare access exacerbates these challenges (Ho et al., 2024). Scholars stress the necessity for evidence-based interventions addressing the social determinants of LGBT mental health (PLOS Mental Health, 2024; Sage Journals, 2024). The intersection of religion, law, and health calls for nuanced, community-sensitive approaches rather than confrontational advocacy.

In conclusion, while Malaysia grapples with balancing human rights discourses and Islamic values, it is imperative for stakeholders—policymakers, religious authorities, and civil society—to promote holistic strategies. These should foster dialogue, enhance mental health support, and respect Malaysia’s religious and cultural identity.

METHODS

The approach applied in this research is Design and Development (Richey & Klein, 2013). Meanwhile, the method of obtaining expert agreement through the Fuzzy Delphi technique was used in Phase II of the study, which is the design phase. This technique was introduced by Murray et al. (1985) and further refined by Kaufmann and Gupta (1988).

The Fuzzy Delphi Method (FDM) is a systematic approach that integrates insights from multiple individuals to generate a unified conclusion, particularly valuable in scenarios requiring expert consensus on ambiguous topics. This methodology blends the traditional Delphi method, which relies on iterative rounds of questioning among experts, with fuzzy set theory to address vagueness in opinions. This enhancement facilitates a more nuanced understanding of expert assessments, capturing degrees of consensus rather than requiring absolute agreement, which is often difficult to achieve (Aria et al., 2020; Hashim et al., 2020).

The structured process of the Fuzzy Delphi Method involves several critical steps, starting from the determination of linguistic variables and translating them into fuzzy numbers. This transformation is crucial as it allows for the incorporation of expert judgment into a quantifiable framework that can accommodate uncertainty in evaluations (Zulkifli et al., 2022). By employing a linguistic scale converted into triangular fuzzy numbers, the FDM operationalizes subjective opinions, leading to a synthesis that reflects collective expertise rather than individual biases (Mustapha et al., 2023).

Moreover, the advantages of the Fuzzy Delphi Method lie in its efficiency and cost-effectiveness. Compared to the classical Delphi approach, the FDM lessens the time required to reach a consensus, reducing the strain of multiple evaluation rounds imposed on participants. This streamlined process makes it practical for a variety of applications, from curriculum development to healthcare assessments, where swift yet robust consensus is critical for informed decision-making. The combined use of expert insights not only yields comprehensive findings but also fosters collaborative knowledge construction

among specialists, enhancing the quality of outcomes across diverse fields such as education and technology (Jani et al., 2018; Tai et al., 2017).

The Fuzzy Delphi technique was chosen because researchers found that this technique was considered the best technique to obtain expert agreement in verifying the elements that need to be included in developing the Hijrah Fitrah Community Holistic Recovery Model (M-PHKHF). The justification for selecting the Fuzzy Delphi technique by the researchers is first, the Fuzzy Delphi method is a systematic method that combines the results of individuals to obtain a common conclusion (Helmer, 1977). Second, the main objective of the Fuzzy Delphi technique is to obtain feedback that has high validity on the problem and questionnaires given to a group of experts. In addition, the Fuzzy Delphi technique has three special properties, namely transparency, controlled feedback and group statistical analysis (Armstrong, 1989). The steps for analyzing data using the Fuzzy Delphi technique are as shown in Table 1 below.

Table 1. Fuzzy Delphi Technique

Steps in developing the Fuzzy Delphi Technique	
Determining the number of experts	21 experts were appointed based on their respective fields of expertise to ensure the validity and reliability of the data.
Choosing a linguistic scale	Choosing a seven-item linguistic scale
Obtaining the average value (a1, am, a3)	Obtaining the average value deviation for each expert. The average value is the distance between two fuzzy numbers calculated based on the average value deviation from each individual expert involved.
Determining the value of d	Obtaining an overview of the degree of expert agreement through the threshold value (d). This refers to the degree of expert agreement d ≤ 0.2 which exceeds 75% for each item category.
Fuzzy Evaluation Process	Obtaining the total triangular fuzzy number for the defuzzification process
Defuzzification Process	Determining the ranking for each item by looking at the highest Defuzzification value.

Based on Table 1, there are six steps in the Fuzzy Delphi technique starting from determining the number of experts to the final result, which is the ranking of each item which allows researchers to decide on the elements for the Hijrah Fitrah Community Holistic Rehabilitation Model (M-PHKHF).

In conclusion, the Fuzzy Delphi Method is a systematic and structured mechanism designed to synthesize expert opinions into a coherent consensus, effectively addressing the complexities of ambiguous issues through the rigorous analysis and interpretation of fuzzy data. This makes it a valuable tool in both academic research and practical applications, ensuring well-rounded decision-making based on expert consensus derived from intricate qualitative data (Abd Majid et al., 2024; Rasit et al., 2024; Majid et al., 2024).

Researchers used the Fuzzy Evaluation and Defuzzification values obtained to determine the ranking for each item in the Round Number content standard, Basic Operations content standard, critical thinking skills, communication skills, collaboration skills, creativity skills and active learning activities according to the consensus of the expert panel. The item that received the highest defuzzification value will occupy the top ranking and will be taken into account in the design of the Hijrah Fitrah Community Holistic Rehabilitation Model (M-PHKHF).

This section explains in detail the research conducted in the design and model development phase. There are two main parts conducted in this study, namely the design study and the development study of a holistic LGBT rehabilitation model. The primary focus of this phase is to design and develop a holistic LGBT rehabilitation model in Malaysia. Referring to the needs analysis, there is a clear need to develop a rehabilitation model that focuses on the needs of holistic rehabilitation elements for LGBT practitioners in Malaysia who want to transition. In addition, there is a lot of research literature that discusses the need to apply holistic rehabilitation elements in an integrated and comprehensive manner to LGBT practitioners. This also supports the production of this holistic rehabilitation model.

As stated, in this study phase there are two main phases carried out by the researcher, namely the holistic rehabilitation model design phase and the holistic rehabilitation model development phase. For the design of the holistic rehabilitation model, the researcher used the Fuzzy Delphi (FDM) method to obtain expert consensus on the main components and their elements to form a holistic rehabilitation

model for the LGBT Community in Malaysia. Meanwhile, in model development, the application of the Interpretive Structural Modeling (ISM) approach with the assistance of Concept Star software is used.

Design Analysis of a Holistic Rehabilitation Model for LGBT

This model design analysis aims to obtain and extract the main components and elements needed in the production of a holistic LGBT rehabilitation model. This phase is very important because the formation of a holistic LGBT rehabilitation model is based on the analysis of interviews from LGBT transitioners and the production of this holistic rehabilitation model must be seen in the context of LGBT rehabilitation in Malaysia.

In this design analysis phase, the four steps that have been used by the researcher to extract and produce the main components and elements needed by the holistic LGBT rehabilitation model. Table 2 is a summary that shows each step carried out to answer each research question. This table also displays a summary of each step used in the model design analysis phase.

Table 2. Steps for analyzing the design of a holistic LGBT rehabilitation model and research questions

Steps	Activity	Research Questions
1	Development of the main components of the model based on existing models	What are the main components of a holistic rehabilitation model for LGBT in Malaysia based on expert consensus?
2	Validation of the main components of the model based on expert consensus using the Fuzzy Delphi (FDM) method.	
3	Development of elements for each main component of the holistic rehabilitation model based on data from needs analysis and literature review data.	What are the elements in the main components of the holistic rehabilitation model for LGBT in Malaysia based on expert consensus?
4	Validation of elements of each component based on expert consensus using the Fuzzy Delphi (FDM) method.	

Findings Step 2: Validation of the principal components of the model based on expert consensus using the Fuzzy Delphi method (FDM)

In determining the main components of this holistic rehabilitation model, the researcher conducted a literature review as discussed in the findings of step 1 presented earlier. Therefore, the findings of step 2 are intended to evaluate and validate based on the consensus of a group of experts on the components that have been selected based on the findings of the literature review and interviews. The group of experts involved in validating these components is very important because these experts should consist of those who are directly involved in the context of this study.

The analysis of the research data for the Fuzzy Delphi method (FDM) is based on the conditions contained in the triangular fuzzy number and defuzzification process. The conditions for the triangular fuzzy number involve the threshold value (d) and the expert consensus rate where the threshold value (d) for each item (component and element) measured must be less than or equal to 0.2 (Chen, 2000; Cheng & Lin, 2002) and the percentage of expert group consensus must be greater than or equal to 75.0% (Chu & Hwang, 2008; Murry & Hammons, 1995). The threshold value (d) will be analyzed using Microsoft Excel based on the following formula:

For the defuzzification process, there is only one condition, which is that the fuzzy score value (A) must be greater than or equal to the α-cut value of 0.5 (Tang & Wu, 2010; Bodjanova, 2006). This fuzzy score value has also been analyzed using Microsoft Excel using the following formula:

$A = (1/3)^* (m_1 + m_2 + m_3)$

Description of the Expert Panel for the Main Components of the Holistic Rehabilitation Model for LGBT

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

In the process of designing this model, 21 experts were identified to review, discuss, evaluate and validate the main components required by a holistic LGBT recovery model. All of these expert panels were brought together in a workshop that was conducted to review the needs of the four main components of the model. All of these main components are very important to discuss whether they are accepted or rejected and then validated based on consensus from a group of experts who have direct experience in the context of the study. The expert panels identified and involved in providing recommendations and validation of the main components in the model are as follows:

i. A lawyer with expertise in the field of human rights for over 10 years.
ii. Three Islamic affairs officers with expertise in the field of sociology of *da'wah* and direct involvement in LGBT rehabilitation for over 10 years.
iii. An officer from the Al-Riqab rehabilitation division of MAIS with 10 years in the field of LGBT interpretation and guidance.
iv. A lecturer from the International Islamic University (IIUM), Kuantan Pahang with a doctorate in family medicine and expertise in LGBT rehabilitation of over 15 years.
v. Three deputy chairmen from the Usrah Fitrah Organization (USFI), the Insaf Pahang Organization (INSAF), and the Insan Permata Disayangi Organization (PINTAS) with 15 years of direct experience in LGBT rehabilitation and guidance.
vi. A Cluster Head, M48 Training Division, Malaysian Social Research and Development Cluster (ISM) with 10 years of direct involvement in LGBT-related matters.
vii. A counselor with 15 years of experience in the fields of household, industrial, LGBT and other counseling.
viii. Five representatives from among LGBT transitioners undergoing recovery.
ix. Five representatives from among families directly involved in LGBT recovery.

The table below shows the study findings for the main components of the holistic recovery model for LGBT based on expert consensus using Fuzzy Delphi (FDM) analysis. The findings of this study include the threshold value (d) and percentage values for each expert group.

Table 3: Findings of the Main Components of the Holistic Rehabilitation Model for LGBT Based on the Fuzzy Delphi Method (FDM)

Expert Role		Primary Components			
		1	2	3	4
1	Government	0.025	0.115	0.089	0.076
2	Government	0.127	0.038	0.089	0.076
3	Government	0.127	0.038	0.064	0.076
4	Government	0.025	0.038	0.089	0.076
5	Government	0.025	0.115	0.064	0.076
6	NGO	0.025	0.038	0.064	0.076
7	NGO	0.025	0.038	0.064	0.076
8	NGO	0.025	0.115	0.064	0.076
9	NGO	0.025	0.038	0.064	0.076
10	Community Group	0.025	0.038	0.064	0.076
11	Community Group	0.025	0.038	0.064	0.076
12	Community Group	0.025	0.115	0.064	0.076
13	Community Group	0.025	0.038	0.089	0.076
14	Community Group	0.025	0.038	0.089	0.076
15	Community Group	0.127	0.115	0.089	0.076
17	LGBT Community	0.127	0.038	0.089	0.076

18	LGBT Community	0.025	0.038	0.089	0.076
19	LGBT Community	0.025	0.115	0.089	0.076
20	LGBT Community	0.025	0.038	0.064	0.076
21	LGBT Community	0.025	0.038	0.064	0.076
Average Threshold Value, d		0.044	0.060	0.075	0.076
Expert Agreement (%)		100.0	100.0	100.0	100.0
Fuzzy Score (A)		0.950	0.942	0.927	0.917

Table 4. Key components of a holistic LGBT rehabilitation model based on Fuzzy Delphi (FDM) analysis and expert panel recommendations

No.	Primary components	*Triangular Fuzzy Numbers*		*Defuzzification Process*				Expert Agreement
		Threshold value, d	Expert agreement (%)	m1	m2	m3	*Fuzzy* score (A)	
1.	Role of Government	0.044	100.0	0.867	0.983	1.000	0.950	Received
2.	Role of NGOs	0.060	100.0	0.850	0.957	1.000	0.942	Received
3.	Role of the LGBT Community	0.075	100.0	0.819	0.962	1.000	0.927	Received
4.	Role of Community Groups	0.076	100.0	0.800	0.950	1.000	0.917	Received
Component Recommendations from the Expert Panel								
1.	None							

Conditions:

Triangular Fuzzy Numbers

1) *Threshold* value (d) ≤ 0.2

2) Rate of expert agreement ≥ 75.0%

Defuzzification Value

3) *Fuzzy* score*(A)* ≥ value α – cut = 0.

Model development analysis is the second part of the design and development phase of the holistic LGBT rehabilitation model. As discussed previously, the study aims to produce a model known as the holistic LGBT rehabilitation model which contains several main components and elements agreed upon by experts involved and directly experienced with LGBT recovery. In developing this model, the Interpretive Structural Modeling (ISM) approach was used. In the process of developing this model, a group of experts was selected to conduct a vote on the elements contained in each main component of the model, which was analyzed using the Fuzzy Delphi (FDM) method approach as described in the model design section. The vote conducted was intended to see the sequence and priority of the elements contained in the components of the Government role, the NGO role, the Community Group role and the LGBT Community role.

In this holistic LGBT rehabilitation model development phase, five steps were used to obtain the model development findings. The table shows a breakdown of each step and activity carried out to answer the research questions.

Table 5. Steps for analyzing the development of a holistic LGBT rehabilitation model and research questions

Step	Activity	Study Question
1	Expert validation of elements in the developed main components	What is the priority of elements for each major component of a holistic LGBT rehabilitation model in Malaysia, based on expert consensus?
2	Construction of relational and contextual phrases	
3	Development of a holistic rehabilitation model for LGBT using Interpretive Structural Modelling (ISM) software	

4	Presentation and evaluation
5	Analysis and interpretation of the model

DISCUSSION

This study focuses on the design and development of a Holistic Rehabilitation Model for the Hijrah Fitrah Community (M-PHKHF) for the LGBT Community in Malaysia, using the Fuzzy Delphi Method (FDM) and Interpretive Structural Modeling (ISM). The following is a discussion based on the findings of the study. This includes the main components of the model, as validated by an expert panel, as well as the validation and formation of the model based on expert needs and consensus.

Need for a Holistic Rehabilitation Model

This study shows that there is a clear need to develop a holistic rehabilitation model that can help the LGBT Community in Malaysia who want to transition back to *fitrah*. Findings from the needs analysis and literature review suggest that rehabilitation for the LGBT Community should involve an integrated approach that encompasses various aspects of the individual's life, such as psychological, social, and spiritual. This is supported by evidence that a holistic and comprehensive approach would be more effective in addressing the issues faced by individuals who want to undergo rehabilitation.

The need for a Holistic Rehabilitation Model tailored to the LGBTQ+ community arises from various intersecting factors that impact their health and well-being. Members of the LGBTQ+ population often experience unique health disparities, primarily due to systemic discrimination, social stigma, and a lack of culturally competent healthcare services. Effective interventions must therefore take into account not only the physical health concerns but also the socio-psychological factors exacerbating these disparities.

Holistic rehabilitation for LGBTQ+ individuals is necessary because of the compounded effects of minority stress and historical societal discrimination. Research indicates that experiences of stigma and discrimination significantly affect mental health outcomes, with LGBTQ+ individuals reporting higher rates of mental health issues compared to their heterosexual counterparts (Russell & Fish, 2016). For instance, a study focused on LGBTQ+ youth revealed that victimization related to sexual orientation is linked to increased substance use, highlighting the urgent need for interventions that address underlying mental health issues and provide support for resilience (Huebner et al., 2014; Ryan et al., 2010). The minority stress model suggests that social support systems and community solidarity are critical to mitigating the adverse effects of such discrimination, necessitating a holistic approach that integrates mental health care, social support, and community resources (Browne et al., 2011).

Moreover, there are significant barriers to accessing appropriate healthcare within the LGBTQ+ community. A study indicated a disconnection between the needs of LGBTQ+ populations and the availability of tailored health services, underscoring the fact that many treatment facilities lack specific programs designed for these communities (Williams & Fish, 2020; Ware et al., 2023). This gap is concerning as LGBTQ+ individuals experience high rates of substance abuse yet have low treatment utilization rates, particularly among groups like bisexual women who face compounded barriers to care (McCabe et al., 2013). Consequently, interventions should be designed with accessibility at their core, ensuring they cater to the unique needs of the LGBTQ+ community while fostering an inclusive environment.

Additionally, the healthcare workforce’s lack of training regarding LGBTQ+ health issues further complicates the landscape. Educational disparities in medical and nursing training regarding LGBTQ+ health needs lead to inadequate care for these populations. Studies have shown substantial deficiencies in the knowledge and confidence of healthcare providers in delivering LGBTQ+ affirmative care, which not only affects health outcomes but also deters individuals from seeking care (Levy et al., 2021; Strong & Folse, 2015). Comprehensive training for healthcare professionals, emphasizing compassionate and knowledgeable care practices, is paramount for achieving effective health rehabilitation (Sekoni et al., 2017; Keuroghlian et al., 2017). Furthermore, addressing the holistic needs of LGBTQ+ individuals involves personalizing care to include considerations related to safe spaces, cultural competence, and relevant community knowledge. These elements are vital for fostering trust between healthcare providers and LGBTQ+ patients, which is crucial for effective health outcomes

(Browne et al., 2011; Jerala & Petek, 2024). Acknowledging and integrating these aspects into treatment frameworks would present an avenue for enhancing both access and quality of care.

In conclusion, the call for a Holistic Rehabilitation Model for LGBTQ+ individuals is grounded in the recognition of multifaceted health disparities stemming from systemic oppression, discrimination, and targeted health risks. By adopting a holistic approach that encompasses mental health, social support, accessibility to tailored services, and provider training, one can foster an inclusive healthcare environment that adequately addresses the unique needs of the LGBTQ+ community.

Fuzzy Delphi Method (FDM) in Model Design:

Fuzzy Delphi was used to derive consensus from an expert panel on the components and elements that need to be included in a holistic rehabilitation model. The study findings showed that the threshold value (d) for each principal component was low, indicating a high level of agreement among the expert panel. In addition, the percentage of expert agreement exceeded 75% for each item. This shows that there was very good agreement on the need and suitability of the principal components proposed in the model. The high Fuzzy score for each principal component also indicates a high level of acceptance of each component.

Main Components of a Holistic Rehabilitation Model:

The results of the study show that the four main components that should be present in a holistic rehabilitation model for LGBT, based on Fuzzy Delphi (FDM) analysis, are:

a. Government: This component received the highest score with 100% agreement from experts. This reflects the importance of the Government's role in supporting rehabilitation through policies, programs, and support in the form of counseling and education.
b. Non-Governmental Organizations (NGOs): NGOs play an important role in providing practical support and resources for recovery. The Fuzzy score for this component is also very high, with 100% expert agreement.
c. LGBT Community: The LGBT Community plays a role in providing emotional and social support to individuals who chose to rehabilitate. Although the Fuzzy score is slightly lower than the first two components, expert agreement still reaches 100%.
d. Role of Community Group: The community needs to provide social support to individuals who choose to rehabilitate. This includes accepting LGBT individuals who want to change, and providing space for them to reintegrate into society.

Use of Interpretive Structural Modeling (ISM):

The application of Interpretive Structural Modeling (ISM) in conjunction with the Fuzzy Delphi Method (FDM) has emerged as a robust approach for analyzing complex relationships among components in various fields, including risk management, supply chain management, and organizational effectiveness. These methodologies facilitate a multifaceted understanding of components and their interactions by not only identifying but also modeling the interdependencies among them.

ISM serves a crucial role in clarifying how different components relate to one another within a framework established by FDM. The latter is instrumental in gathering expert opinions to refine and prioritize the components being analyzed. For instance, Khalilzadeh et al. affirm that risks categorized through brainstorming and validated using FDM can be subsequently modeled to reveal relationships among these risks through ISM (Khalilzadeh et al., 2024). This deepened comprehension fosters refined strategies and more informed decisions in critical areas such as sustainability and commercialization (Ala et al., 2021). Furthermore, ISM can effectively delineate driving and dependent factors within complex systems. For instance, Gorane and Kant utilized ISM to establish contextual relationships among supply chain management enablers, integrating their findings with fuzzy MICMAC analysis for an enhanced understanding of dependencies (Gorane & Kant, 2013). This layered analysis allows for differentiation between factors that primarily drive systems and those that are more reliant on other components. Ullah et al. also applied a similar ISM framework to evaluate open innovation factors post-COVID-19, highlighting how relationships between factors were pivotal in identifying critical enablers in the food and beverage industry (Ullah et al., 2023).

The integration of these methodologies has been shown to be particularly effective in sectors such as education and supply chain management. For instance, Chanchaichujit et al. utilized a Fuzzy Delphi and ISM approach to analyze barriers to technology adoption in agricultural supply chains, revealing a structured hierarchy among various challenges (Chanchaichujit et al., 2024).

The iterative nature of FDM enables continuous improvement of the input used for ISM. In contrast, ISM provides a structural framework that enhances the findings obtained through the Delphi method. As demonstrated by Kumar et al., the application of these hybrid approaches in assessing digital resilience in SMEs indicates clear interdependencies among various enablers, thus underscoring the necessity for comprehensive modeling in evaluating factors affecting organizational performance (Kumar et al., 2023). As a result, the synergy between FDM and ISM not only aids in defining critical success factors but also assists in strategizing interventions based on established relationships.

In summary, the collaborative application of ISM and the Fuzzy Delphi Method presents a powerful toolset for researchers and practitioners aiming to unravel and contextualize the intricate relationships among components within any given system. This methodology not only enhances decision-making by elucidating the hierarchical structures and dependencies but also remains adaptable across various fields and contexts.

After confirming the main components, the next step in model development is to use ISM software to determine the relationships between these main components. With ISM, the relationships between each component and element can be analyzed in greater detail in order to ensure a clearer and more systematic model structure. This allows the researcher to determine the sequence and priority of each element within each component based on the importance and priorities given by the expert panel. As a result, ISM allows the formation of a more structured model that is suitable for the Malaysian context.

Impact and Implications of the Holistic Rehabilitation Model: The model developed through this study has major implications in efforts to help the LGBT Community in Malaysia to transition. By involving various parties, such as the Government, NGOs, the LGBT community, and the greater community, this model provides comprehensive and integrated support to individuals who want to return to their natural state. It also outlines the important role of each party in providing the assistance necessary to ensure a more effective rehabilitation process.

Model Acceptance by the Expert Panel:

The high acceptance of the developed model is evident from the high Fuzzy score and the percentage of expert agreement which reached 100%. This shows that this holistic rehabilitation model is considered relevant and appropriate to the needs of the LGBT community who want to transition, as well as receiving full support from the experts involved in this study. The effectiveness of this model is expected to be measured through wider implementation and integration with existing programs.

This phenomenon can be attributed to the effectiveness of the Fuzzy Delphi method in eliciting and analyzing expert opinions, providing both precision and clarity in the evaluation process. The Fuzzy Delphi method is designed to facilitate consensus among experts more effectively than traditional Delphi techniques, which often require multiple rounds of assessments. This modern approach allows for the quick aggregation of expert opinions while mitigating the uncertainties commonly associated with qualitative data (Yusoff et al., 2021). Specifically, Yusoff et al. demonstrated that using the Fuzzy Delphi method can lead to a clear validation of elements within educational models, which indicates its reliability in garnering expert agreement across various fields (Yusoff et al., 2021). Similarly, Mustapha et al. highlighted that expert analysis through triangular fuzzy numbers and defuzzification processes yielded good levels of agreement in model components pertaining to mastery education (Mustapha et al., 2023), further underscoring the effectiveness of the method in achieving clarity and establishing a shared understanding.

Expert consensus, marked by the high percentage of agreement, reflects not only the comprehensiveness of the developed model but also the confidence and relevance of the model components identified during the expert evaluations. For instance, Deli noted that achieved consensus on model elements could be exceptionally high, validating that the model met expert expectations and needs (Deli, 2023). In other studies, including those by Liu et al., the consistency and sharp consensus

observed were pivotal in affirming model integrity, demonstrating that the collaborative nature of the Fuzzy Delphi method played a vital role in solidifying expert validation (Liu et al., 2023).

The achievement of high Fuzzy scores parallels the positive expert evaluations, suggesting that the elements of the model resonate strongly with the insights and experiences of the experts. This strong alignment indicates that the model has been effectively tailored to address critical components identified by knowledgeable professionals in the respective field. The results from various studies underline a pattern where a high degree of expert agreement correlates with effective decision-making frameworks, showcasing the method's capacity to distill essential insights from complex expert opinions (Ziemba et al., 2020). Therefore, the compelling combination of high Fuzzy scores with complete expert agreement is a testament to the efficacy of the Fuzzy Delphi methodology in reaching a definitive consensus on model components. This validation process signifies the model's robustness and its acceptance within the scholarly and practical communities it aims to serve.

Advantages of the Fuzzy Delphi and ISM Approaches:

The Fuzzy Delphi and ISM methods used in this study provide advantages in dealing with uncertainty and provide more objective and detailed results in model development. Fuzzy Delphi helps in obtaining expert consensus despite uncertainty in the assessment, while ISM allows for a more structured analysis of the relationships between the main components in the model. The combination of these two methods ensures the development of a model that is more relevant, systematic, and acceptable to all parties involved.

CONCLUSION

The Fuzzy Delphi Technique, used to design a Holistic Recovery Model for the Hijrah Fitrah Community (M-PHKHF) has successfully produced a comprehensive framework to support the rehabilitation process of individuals in the LGBT community who want to return to *fitrah*. Through the collection of views from 21 experts in the field of LGBT and human development, this study has successfully reached a consensus on the main components of the relevant model. The determination of the model components based on the defuzzification process, along with the threshold values, provide a solid foundation to ensure that the model functions well and remains relevant. The results of this study show that the items with the highest ranking are considered the most suitable and effective elements to be included in the model, which makes it more practical and applicable in the rehabilitation context. Therefore, the M-PHKHF Model that was produced not only has significant theoretical implications, but also has the potential to provide great practical benefits in efforts to help the LGBT community undergo the rehabilitation process and return to *fitrah*. This model can be used as a reference by various parties, including Government, NGOs, and individuals in supporting the LGBT community, thus empowering them to achieve positive and comprehensive changes.

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