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Applying the Fuzzy Delphi Technique of Islamic Multidimensional Poverty Index in Measuring Urban Poverty

Teknik Fuzzy Delphi Terhadap Indeks Kemiskinan Multidimensi Berteraskan Islam dalam Mengukur Kemiskinan Bandar

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ABSTRACT

Urban poverty involves more than economic hardship as it encompasses limited access to quality education, inadequate healthcare, insecure housing and social exclusion. It also includes psychological, spiritual, and moral deprivation. Conventional poverty indices such as the Multidimensional Poverty Index (MPI) do not fully capture these non-material aspects, especially in Muslim-majority societies where well-being is shaped by Islamic values. This study introduces an Islamic Multidimensional Poverty Index (i-MPI) based on the principles of maqāṣid al-sharīʿah and includes a unique soul dimension that reflects emotional, perceptual, and behavioral well-being. The Fuzzy Delphi Technique (FDT) was used to gather expert consensus from 14 scholars and practitioners in Islamic economics and poverty research. A total of 18 indicators across six dimensions were evaluated: religion, life, intellect, progeny, wealth, and soul. Triangular fuzzy numbers and defuzzification thresholds were applied to assess clarity, relevance, and expert agreement. Results showed a high level of consensus, particularly in recognizing the value of including spiritual deprivation in poverty assessment. The i-MPI offers a culturally grounded and operationally sound tool for measuring urban poverty in Islamic contexts. It supports applications in zakat allocation, Islamic social finance, and integrated policy planning. This study presents both a practical framework and a conceptual shift that acknowledges spiritual and ethical well-being as essential to understanding poverty.

Keywords: poverty; multidimensional poverty; urban poverty; soul dimension; Fuzzy Delphi method

ABSTRAK

Kemiskinan bandar merangkumi lebih daripada sekadar kesusahan ekonomi kerana ia melibatkan keterbatasan akses kepada pendidikan berkualiti, penjagaan kesihatan yang tidak memadai, kediaman yang tidak selamat serta pengasingan sosial. Ia merangkumi masalah kekurangan dari aspek psikologi, rohani dan moral. Walau bagaimanapun, indeks kemiskinan konvensional seperti Indeks kemiskinan multidimensi tidak sepenuhnya menekankan aspek selain material seperti ini khususnya dalam kalangan masyarakat majoriti Muslim yang mana kesejahteraan hidup dibentuk oleh nilai-nilai Islam. Kajian ini memperkenalkan Indeks Kemiskinan Multidimeni Islam (i-MPI) yang berasaskan prinsip maqāṣid al-sharīʿah dan merangkumi dimensi jiwa yang unik untuk mencerminkan kesejahteraan emosi, persepsi dan tingkah laku. Teknik Fuzzy Delphi (FDT) telha digunakan untuk mendapatkan konsensu pakar daripada 14 sarjana dan pengamal dalam bidang ekonomi Islam dan kajian kemiskinan. Sebanyak 18 petunjuk merentasi enam dimensi telah dinilai: agama, nyawa, akal, keturunan, harta dan jiwa. Triangle Fuzzy Number dan Defuzzification process digunakan untuk menilai kejelasan, kerelevanan dan persetujuan pakar. Hasil dapatn menunjukkan bahawa tahap konsensus yang tinggi, khususnya dalam mengiktiraf kepentingan memasukkan masalah kekurangan spiritual dalam poengukuran kemiskinan. I-MPI menawarkan alat pengukuran kemiskinan bandar yang berasaskan budaya dan kukuh dari segi operasi dalam konteks Islam. Ia juga menyokong aplikasi dalam agihan zakat, kewangan sosial Islam dan perancangan dasar bersepadu. Kajian ini menunjukkan rangka kerja praktikal serta perubahan konseptual yang mengiktiraf kesejahteraan rohani dan etika sebagai aspek penting dalam memahami insiden kemiskinan.

Kata Kunci: kemiskinan, kemiskinan multidimensi; kemiskinan bandar; dimensi jiwa; kaedah fuzzy delphi

INTRODUCTION

According to the Global Multidimensional Poverty Index (MPI), more than 1.3 billion people across 105 developing countries are still living in conditions of multidimensional poverty (OPHI, 2018). One-dimensional measures based on income or consumption often fail to reflect the full extent of poverty. It is possible for individuals to be multidimensionally poor without being income poor. Moreover, such monetary approaches overlook dynamic changes in non-income dimensions over time (Salecker et al., 2020). Hence, a robust poverty measurement system should not only account for income but also consider household composition and the ability to consistently access essential resources (Haveman, 2001).

Recent research has emphasized the importance of non-material indicators. Guo (2023) finds that non-material dimensions are often more significant than material ones, with some second-tier indicators contributing little to actual poverty alleviation outcomes. This insight has led major development agencies such as the UNDP, UNICEF, and the World Bank to shift toward multidimensional poverty assessments that address the limitations of purely economic measures (Ngo, 2018).

The MPI, developed by Alkire and Santos (2014), includes ten indicators grouped under three main dimensions, i.e., education, health, and living standards, which align with the Human Development Index. The index accounts for deprivations at the individual level across age and gender, capturing intra-household disparities (Alkire, 2016). TABLE 1 presents the indicators and their respective weights in the global MPI framework.

TABLE 1. Multidimensional Poverty Index (MPI)

Dimension	Indicator	Weightage
Education	Years of schooling	1/6
	School Attendance	1/6
Health	Child Mortality	1/6
	Nutrition	1/6
Living Standard	Electric	1/18
	Sanitation	1/18
	Drinking Water	1/18
	Housing	1/18
	Cooking Fuel	1/18
	Assets	1/18

Source: Alkire (2014)

The reality of urban poverty further complicates measurement efforts. Rising income inequality, labor migration, ethnic disparities, and environmental pressures all contribute to the multidimensional nature of urban deprivation (Nair, 2015; Hatta, 2013). Despite national-level progress in poverty reduction, many urban residents continue to struggle with access to affordable housing and quality education due to escalating living costs (Alston, 2020).

Traditional poverty measures, which focus predominantly on income, remain insufficient to capture the complexity of poverty. Scholars increasingly advocate for frameworks that integrate additional dimensions such as subjective well-being, mental health, social belonging, and spiritual security (Saito et al., 2014; Ostwald, 2009; Kakwata, 2018). Kakwata argues for a more holistic approach that recognizes both material deprivation and spiritual needs, including the influence of religious beliefs and moral practices. Similarly, Strotmann and Volkert (2018) emphasize the importance of incorporating psychological and emotional deprivation into multidimensional indices in order to reflect true well-being.

From an Islamic perspective, poverty extends far beyond materiality. Although recent studies have discussed poverty using the *maqāṣid al-sharīʿah* framework, which outlines the five higher objectives of Islamic law—religion, life, intellect, progeny, and wealth—most have remained conceptual and have not resulted in practical, operational tools (Sevinc, 2023). Moreover, few attempts have been made to empirically incorporate spiritual and emotional deprivation into Islamic poverty measurement models.

This study addresses these gaps by evaluating the viability of an Islamic-based Multidimensional Poverty Index (i-MPI) tailored for urban poverty measurement. The proposed i-MPI includes both conventional deprivation indicators and additional non-material dimensions such as psychological well-being, religious obligation, and inner emotional states. By incorporating the soul dimension alongside the classical *maqāṣid* principles, this study seeks to provide a more comprehensive and spiritually relevant approach to poverty assessment within urban Muslim-majority contexts.

LITERATURE REVIEW

Despite increasing recognition that urban poverty is multidimensional, the literature continues to display major conceptual and methodological shortcomings. Although researchers agree that poverty in urban settings extends beyond financial hardship to include housing, education, health risks, and social exclusion (Suryawati, 2005; Mathur, 2014; Baker, 2008), many studies address these elements in isolation. Most models fail to account for the compounding nature of deprivation across domains. One critical omission is mental health. Although urban poverty is consistently associated with higher rates of depression and anxiety (Min Fui et al., 2022), this dimension is seldom operationalized in mainstream poverty metrics. As a result, interventions based on existing measures may inadequately reflect the lived realities of the urban poor.

The Multidimensional Poverty Index (MPI) was introduced to correct the limitations of income-only models. However, it remains constrained by inconsistent application across contexts. Nolan (2010) emphasized education, living standards, and wealth, while Sher et al. (2014) expanded the index to include electricity, asset ownership, sanitation, and housing. Other regional studies, including Shirvanian (2012) and Ali (2013), modified indicators based on national priorities. While this adaptability supports local relevance, it reveals an absence of a unified conceptual logic for determining poverty dimensions and thresholds. As a result, the MPI lacks both comparability across populations and responsiveness to cultural values, particularly in non-Western societies.

Moreover, the MPI and similar indices are built primarily upon materialist paradigms. Non-material forms of deprivation, such as psychological distress, moral alienation, and spiritual disconnection, are largely excluded from dominant frameworks. These dimensions are particularly important in urban environments where high stress, social fragmentation, and ethical dislocation are widespread (Wilkinson, 2003; Darin-Mattsson, 2017; Degan, 2021; Mickelson, 2014). By omitting such indicators, existing indices risk misrepresenting the true scale and nature of deprivation, thereby weakening the design and targeting of anti-poverty interventions.

Islamic scholarship offers an alternative paradigm that addresses these deficiencies. The framework of *maqāṣid al-sharīʿah* emphasizes five essential dimensions: the preservation of religion, life, intellect, progeny, and wealth (Amiruddin, 2019; Bedoui, 2019; Khan, 2019). Several Islamic scholars have proposed development indices that incorporate spiritual, ethical, and social considerations. Anto (2011) introduced the Islamic Human Development Index, while Mukhtar et

al. (2019) developed the Life-e-Tayyiba Index, which includes values such as compassion, patience, and justice. Aydin (2017) expanded the approach by including physical, ethical, and spiritual dimensions. Despite their conceptual richness, these models often suffer from weak empirical foundations. Many lack operational definitions, measurement instruments, or validation procedures.

Furthermore, most existing Islamic poverty frameworks do not adequately address the unique pressures of urban poverty. Issues such as overcrowding, class mobility, and mental health are rarely integrated into these models. Recent attempts by Rahman et al. (2022, 2023) to align global MPI dimensions with Islamic principles mark an important step forward, but remain largely theoretical. Without empirical validation and implementation mechanisms, these proposals remain unusable for policymakers or development practitioners.

Relatively recent studies have attempted to localize poverty measurement using culturally specific approaches. Ajis et al. (2023) developed a well-being instrument tailored to urban Malay men. Although methodologically sound, the study's narrow demographic scope limits broader applicability. Johari et al. (2025) promoted community-led methods, such as Ethnographic Decision Tree Modeling. While useful for capturing local nuance, these qualitative approaches do not scale well and lack consistency for broader policy application.

Emerging technologies such as satellite imagery and GIS provide powerful tools for mapping spatial deprivation (Sevinc, 2023; COMCEC, 2021). However, these tools continue to reflect materialist assumptions. They measure visible symptoms, such as infrastructure gaps, but overlook inner dimensions of well-being that Islamic thought considers essential.

To address these conceptual and operational limitations, this study proposes an Islamic Multidimensional Poverty Index (i-MPI). The model integrates material and non-material indicators into a unified framework based on the Islamic categorization of needs: essential (*al-ḍarūriyyāt*), complementary (*al-ḥājiyyāt*), and moral refinements (*al-taḥsīniyyāt*). The structure ensures alignment with Islamic ethical priorities while remaining suiTABLE for empirical validation. The classification is shown in TABLE 2:

TABLE 2. Type of Necessities Based on *Maqāṣid al-Shariah* Framework

Type of Necessities	Dimension	Indicators
Needs (*al-ḍarūriyyat*)	Education	Years of Schooling
		School attendance
	Health	Access to healthcare facilities
		Access to clean water
	Living Standard	Conditions of living quarters
		Overcrowding
		Toilet facilities
		Garbage collection facilities
		Transportation
		Basic communication tools
	Monetary	Income
Pleasure (*al-ḥājiyyāt*)	Education	al-Quran & individual obligation (*farḍ al-'ayn*) studies
	Health	Islamic insurance (*takaful*)
	Living Standard	*Hajj* Pilgrimage Fund Board (*Lembaga Tabung Haji*) savings
	Monetary	Islamic subsistence criteria (*ḥad al-kifāyah*)
Moral (*al-taḥsiniyyāt*)	Soul	Emotion
		Perceptual
		Deed

The proposed i-MPI consists of 18 indicators across five dimensions. Unlike conventional models, it incorporates indicators of emotional hardship, religious obligation, and social perceptions of poverty, thereby offering a more holistic view of deprivation. TABLE 3 outlines the index in detail.

TABLE 3. Islamic Multidimensional Poverty Index (i-MPI)

Dimension	Indicator	Poverty Line (poor if....)
1. Education	i. Years of schooling	All household members aged between 13 to 60 years have LESS THAN 6 years of education
	ii. School attendance	Any children aged between 6 to 12 years who are currently NOT enrolled in school
	iii. al-Quran & individual obligation studies (*farḍ al-'ayn*)	Any children aged between 6 to 12 years DID NOT receive al-Quran & individual obligation (*farḍ al-'ayn*) education either formally or informally
2. Health	i. Access to healthcare facilities	Distance to healthcare facility MORE THAN 5km AND no mobile health facility
	ii. Access to clean water	OTHER THAN treated pipe water inside house and water pipe/standpipe
	iii. Islamic insurance (*Takaful*)	Head of the household does not have Islamic insurance (*takaful*) protection.
3. Living Standard	i. Conditions of living quarters	Dilapidated OR deteriorating
	ii. Overcrowding	MORE than 2 household members per bedroom
	iii. Toilet facilities	OTHER than pour or flush toilet
	iv. Garbage collection facilities	NO garbage collection Facility
	v. Transportation	Does NOT OWN transport OR all members in the household do not use private or public transport
	vi. Basic communication tools	Does NOT HAVE consistent fixed laptop/computer/TABLEt. smartphone AND internet subscription.
	vii. *Hajj* Pilgrimage Fund Board (*Lembaga Tabung Haji*) savings	ALL household members do not have savings account at *Hajj* Pilgrimage Fund Board (*Lembaga Tabung Haji*).
4. Monetary	i. Income	Monthly household gross income LESS THAN mean household poverty line income (PLI)
	ii. Islamic subsistence criteria (*ḥad al-kifāyah*)	Monthly household gross income LESS THAN Islamic subsistence criteria (*ḥad al-kifāyah*) calculation.
5. Soul	i. Emotion	Person who faces negative emotion due to the problems in life, based on the following gauge: a) Stress due to financial matters b) Views on the life achievements of others c) Motivation in working/trying d) Surrender to fate to destiny e) Expectations of financial assistance
	ii. Perceptual	Person who has a negative perception of poverty based on the following gauge: a) Poverty is a symbol of humiliation b) Poverty is the cause of social problems/crime c) Poverty gives rise to feelings of envy d) Poverty leads to a lazy nature e) Poverty creates a gap between man
	iii. Deed	Person who abandons at least one of any of the obligatory practices in the Five Pillars of Islam as follows: a) Testifying to faith in God (shahadah) b) Daily Prayers c) Fasting in the month of Ramadan d) Paying donation (zakah) e) Performing the sacred pilgrimage

METHODOLOGY

The application of the Fuzzy Delphi Technique (FDT) in this study was designed to establish expert consensus on the dimensions and indicators proposed for the Islamic Multidimensional Poverty Index (i-MPI). Fourteen experts were purposively selected based on clearly defined criteria, including possession of a doctoral qualification in a relevant discipline and a minimum of five years of academic or professional experience in Islamic economics, poverty research, or sustainable development. This approach was supported by earlier methodological standards that define expertise through a combination of academic qualification and practical immersion (Berliner, 2004; Gambatese et al., 2008).

To operationalize the FDT, a structured one-day workshop was conducted, during which each expert was provided with a comprehensive questionnaire. Experts rated their level of agreement on each item using a 7-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." These linguistic variables were then converted into triangular fuzzy numbers, represented by three values (m1, m2, and m3) that capture the minimum, most likely, and maximum assessments. This method allowed the study to quantify qualitative judgments with greater sensitivity to expert uncertainty.

The use of triangular fuzzy numbers was particularly suiTABLE for indicators that reflect subjective or normative constructs, such as spiritual well-being or emotional deprivation. Unlike binary agreement models, this approach facilitated a more nuanced aggregation of responses. The data were processed in Microsoft Excel using fuzzy logic procedures, including defuzzification, which transforms fuzzy numbers into crisp values to support indicator ranking and final selection. In accordance with FDT protocols, three evaluation thresholds were applied: (i) a defuzzification value exceeding 0.5 (α-cut), (ii) a threshold distance (d-value) less than or equal to 0.2, and (iii) expert consensus of at least 75 percent per item. These thresholds reflect best practice in FDT studies and serve to ensure both internal consistency and expert convergence (Chen, 2000; Chu, 2008; Cheng, 2002).

The results demonstrated strong convergence across all proposed indicators. Each item met or exceeded the α-cut threshold of 0.5, and no item recorded a d-value higher than 0.2. Furthermore, all indicators achieved expert consensus above 75 percent, eliminating the need for a second round of evaluation. This is noteworthy, as many FDT studies require multiple rounds to refine and confirm item suitability. The single-round convergence achieved in this study indicates that the proposed i-MPI structure is both conceptually coherent and broadly accepTABLE among scholars and practitioners.

One methodological refinement involved transitioning from a 7-point scale in the initial evaluation to a 5-point scale during final ranking. This shift, although modest, was intended to simplify the prioritization process without compromising the depth of initial judgment. It reflects the adaptive capacity of the FDT in facilitating iterative consensus building.

Overall, the application of the Fuzzy Delphi Technique validated the five-dimensional structure of the i-MPI and its 18 indicators, providing strong evidence for its theoretical and practical relevance. At the same time, it is important to acknowledge that the robustness of these findings depends on future empirical validation using population-level data. While expert consensus is a necessary precondition for model credibility, it is not sufficient to guarantee predictive validity or field applicability. The next phase of research will therefore involve pilot testing the i-MPI in selected urban communities to examine its reliability, construct validity, and policy sensitivity.

FINDINGS

This section presents an analysis of the expert validation of the Islamic Multidimensional Poverty Index (i-MPI) based on the Fuzzy Delphi Technique (FDT). The findings are organized around expert demographics, general consensus on the i-MPI model, and validation of specific Islamic indicators across its five dimensions. Where relevant, trends and disparities across expert domains are noted.

A total of 14 experts participated in the FDT process, comprising predominantly female participants (71%) and academics (71%). As shown in TABLE 4, the group represented diverse economic subfields, including Islamic economics (22%), monetary economics, development economics, and international economics. The majority (79%) had over 10 years of experience, indicating a well-established panel. This demographic composition suggests a strong representation of scholars steeped in both Islamic and conventional economic frameworks. In addition, the inclusion of non-academic experts from institutions such as the Department of Statistics Malaysia (DOSM) and the Economic Planning Unit may have introduced practical, policy-oriented perspectives to complement theoretical input.

TABLE 4. Experts‘ Demographic

No.	Statement	Demographic	Percentage (N)
1	Gender	Male	29.0% (4)
		Female	71.0% (10)
2	Type of Expert	Academic	71.0% (10)
		Non-Academic	29.0% (4)
3	Expertise	Poverty & Sustainability	7.0% (1)
		Development Economics	7.0% (1)
		Community & Deprivation	7.0% (1)
		Monetary Economics	7.0% (1)
		Islamic Economics	22.0% (3)
		Social Economics & International Economics	7.0% (1)
		Economics & Islamic Finance	7.0% (1)
		International Economics & Islamic Finance	7.0% (1)
		Economics	14.0% (4)
4	Experience	5–10 years	22.0% (3)
		More than 10 years	79.0% (11)

OVERALL EXPERT CONSENSUS ON I-MPI

The aggregated results in TABLE 5 show high levels of agreement across all five evaluation items. The highest consensus (92.9%) was observed for the statements that the i-MPI meets the definition of multidimensional poverty (item 1), can be applied to measure urban poverty (item 2), and helps identify urban poor groups (item 4), with d-values well below the 0.2 threshold. Interestingly, item 3, which focuses on the alignment of the index with specific urban household deficiencies, received a lower consensus (78.6%) and a slightly elevated d-value (0.161). This may reflect subtle differences in how experts interpret urban deprivation contexts or their expectations regarding index granularity.

TABLE 5. Experts' Consensus for the Islamic Multidimensional Poverty Index (i-MPI)

No.	Item/Element	Triangular Fuzzy Numbers Condition		Fuzzy Evaluation Process Condition				Experts Consensus
		Threshold Value (d)	Percentage of Experts Consensus (%)	m1	m2	m3	Fuzzy Score (A)	
1	This index content meets the definition of multidimensional poverty.	0.158	92.9%	0.600	0.793	0.936	0.776	Accept
2	This index content can be applied in measuring urban poverty.	0.142	92.9%	0.571	0.771	0.929	0.757	Accept
3	This content of the index is consistent with the deficiencies problem faced by urban households.	0.161	78.6%	0.557	0.750	0.907	0.738	Accept
4	This index content can help to identify the urban poor group widely.	0.131	92.9%	0.557	0.757	0.921	0.745	Accept
5	The overall content of this index is complete in measuring urban poverty.	0.166	85.7%	0.457	0.657	0.843	0.652	Accept

Condition:
Triangular Fuzzy Numbers
1. Threshold Value (d) ≤ 0.2
2. Percentage of Expert Consensus > 75%
Defuzzification Process
3) Fuzzy Score (A) > α-cut value = 0.5

TABLE 6 reveals further variation when the consensus is disaggregated by area of expertise. While most disciplines reported d-values under the 0.2 threshold, experts in Poverty & Sustainability displayed markedly higher disagreement levels, especially for item 1 (d = 0.414). Conversely, Development Economics, Islamic Economics, and Community & Deprivation experts showed uniformly low d-values, suggesting greater alignment with the proposed construct. This pattern indicates that acceptance of the index content may be shaped by disciplinary assumptions, particularly regarding poverty's definitional scope.

TABLE 6. Experts' Consensus Based on Expertise

Experts	Item/Element				
	1	2	3	4	5
Poverty & Sustainability	0.414	0.388	0.357	0.370	0.231
Development Economics	0.138	0.087	0.060	0.069	0.076
Community & Deprivation	0.138	0.087	0.060	0.069	0.076
Monetary Economics	0.138	0.087	0.060	0.183	0.076
Islamic Economics #1	0.115	0.087	0.357	0.069	0.231
Islamic Economics #2	0.115	0.087	0.060	0.069	0.231
Islamic Economics #3	0.115	0.087	0.060	0.069	0.231
Social Economics & International Economics	0.115	0.087	0.060	0.069	0.076
Economic & Islamic Finance	0.278	0.165	0.195	0.069	0.076
International Economics & Islamic Finance	0.138	0.165	0.195	0.183	0.076
Economics #1	0.138	0.165	0.195	0.183	0.321
Economics #2	0.115	0.165	0.195	0.183	0.076
Economics #3	0.115	0.165	0.332	0.183	0.321
Economics #4	0.138	0.165	0.060	0.069	0.231
Threshold Value (d) for each item	**0.158**	**0.142**	**0.161**	**0.131**	**0.166**

Percentage of Experts Consensus (%)	**92.9%**	**92.9%**	**78.6%**	**92.9%**	**85.7%**
Fuzzy Score Value (A)	**0.776**	**0.757**	**0.738**	**0.745**	**0.652**
Condition:					
Triangular Fuzzy Numbers					
1. Threshold Value (d) ≤ 0.2					
2. Percentage of Expert Consensus > 75%					
Defuzzification Process					
3) Fuzzy Score (A) > α-cut value = 0.5					

VALIDATION OF KEY ISLAMIC INDICATORS

The proposed integration of Islamic indicators into the dimensions of Education, Health, Living Standards, and Monetary conditions was generally well received. As detailed in TABLE 7, all four items met the minimum thresholds, though consensus levels and d-values varied.

- Item 2 (Takaful) had the highest d-value (0.240), even though it reached 85.7% consensus. This discrepancy suggests that while the inclusion of Islamic insurance is broadly supported, experts may diverge on its operationalization.
- Item 1 (Farḍ al-ʿayn studies) and Item 3 (Tabung Haji savings) recorded the lowest consensus (78.6%), suggesting these education and religious financial indicators may require further clarification or contextualization.

TABLE 7. Experts' Consensus on Islamic Indicators for Education, Health, Monetary and Living Standard Dimension

No.	Item/Element	Triangular Fuzzy Numbers Condition		Fuzzy Evaluation Process Condition				Experts Consensus
		Threshold Value (d)	Percentage of Experts Consensus (%)	m1	m2	m3	Fuzzy Score (A)	
1	al-Qur'an and individual obligation (*farḍ al-'ayn*) studies are suiTABLE for measure urban multidimensional poverty through the education dimension	0.147	78.6%	0.514	0.714	0.886	0.705	Accept
2	Subscription of Islamic insurance (*takaful*) as health protection is suiTABLE for measure urban multidimensional poverty through the health dimension.	0.240	85.7%	0.486	0.686	0.850	0.674	Accept
3	*Hajj* Pilgrimage Fund Board (*Lembaga Tabung Haji*) savings is suiTABLE for measure urban multidimensional poverty through the living standard dimensions.	0.179	78.6%	0.471	0.671	0.850	0.664	Accept
4	Islamic subsistence criterion (had al-kifayah) is suiTABLE for measuring urban multidimensional poverty through the monetary dimension.	0.199	85.7%	0.629	0.807	0.929	0.788	Accept

Condition:
Triangular Fuzzy Numbers
1. Threshold Value (d) ≤ 0.2
2. Percentage of Expert Consensus > 75%
Defuzzification Process
3) Fuzzy Score (A) > α-cut value = 0.5

TABLE 8 supports this interpretation, showing several experts across different domains assigned d-values above the threshold for certain items. Notably, Monetary Economics experts recorded d = 0.566 for takaful and d = 0.259 for ḥad al-kifāyah. In contrast, Islamic Economics experts demonstrated low d-values across all indicators, pointing to high internal consistency and alignment with the index's religious dimensions.

These inter-field differences hint at epistemological tensions, between those emphasizing practical economic measurability and those more attuned to faith-based constructs.

TABLE 8. Experts' Consensus Based on Expertise

Experts	Item/Element 1	2	3	4
Poverty & Sustainability	0.309	0.262	0.248	0.427
Development Economics	0.243	0.289	0.060	0.133
Community & Deprivation	0.022	0.053	0.060	0.259
Monetary Economics	0.309	0.566	0.060	0.259
Islamic Economics #1	0.022	0.053	0.248	0.133
Islamic Economics #2	0.022	0.053	0.060	0.124
Islamic Economics #3	0.022	0.566	0.248	0.133
Social Economic & International Economics	0.022	0.053	0.248	0.133
Economic Studies & Islamic Finance	0.022	0.289	0.060	0.427
International Economics & Islamic Finance	0.243	0.289	0.304	0.124
Economics #1	0.243	0.289	0.304	0.124
Economics #2	0.022	0.289	0.304	0.124
Economics #3	0.243	0.053	0.060	0.259
Economics #4	0.309	0.262	0.248	0.124
Threshold Value (d) for each item	**0.147**	**0.240**	**0.179**	**0.199**
Percentage of Experts Consensus (%)	**78.6%**	**85.7%**	**78.6%**	**85.7%**
Fuzzy Score Value (A)	**0.705**	**0.674**	**0.664**	**0.778**

Condition:
Triangular Fuzzy Numbers
1. Threshold Value (d) ≤ 0.2
2. Percentage of Expert Consensus > 75%
Defuzzification Process
3) Fuzzy Score (A) > α-cut value = 0.5

ANALYSIS OF EXPERT CONSENSUS ON THE SOUL DIMENSION & INDICATORS

The incorporation of a "soul" dimension, spanning emotional, perceptual, and behavioral components, was received positively, with all indicators exceeding the required consensus and defuzzification thresholds (TABLE 9). The overall soul dimension itself achieved 92.9% consensus with a low d-value (0.116), suggesting strong panel agreement on its relevance. Among the individual indicators:

- The Deed indicator had the highest support (85.7%, d = 0.130)
- Emotion and Perception each received 78.6% consensus, with slightly elevated d-values.

TABLE 9. Experts' Consensus on Soul Dimension & Indicators

No.	Item/Element	Triangular Fuzzy Numbers Condition		Fuzzy Evaluation Process Condition				Experts Consensus
		Threshold Value (d)	Percentage of Experts Consensus (%)	m1	m2	m3	Fuzzy Score (A)	
1	The soul dimension is suiTABLE for measuring urban multidimensional poverty.	0.116	92.9%	0.543	0.743	0.914	0.733	Accept
2	The emotion indicator is suiTABLE for measuring soul dimension in urban multidimensional poverty.	0.161	78.6%	0.557	0.750	0.907	0.738	Accept
3	The perceptual indicator is suiTABLE for measuring soul dimensions in urban multidimensional poverty.	0.144	78.6%	0.543	0.736	0.900	0.726	Accept
4	A deed indicator is suiTABLE for measuring soul dimension in urban multidimensional poverty.	0.130	85.7%	0.557	0.750	0.914	0.740	Accept

Condition:
Triangular Fuzzy Numbers
1. Threshold Value (d) ≤ 0.2
2. Percentage of Expert Consensus > 75%
Defuzzification Process
3) Fuzzy Score (A) > α-cut value = 0.5

TABLE 10 highlights further differentiation among expert responses. Experts with backgrounds in Economics and Monetary fields occasionally registered higher d-values for affective or behavioral constructs. In contrast, Islamic and community-focused experts consistently reported low d-values, indicating close alignment with these spiritually informed dimensions.

While not conclusive, this pattern suggests greater receptivity to spiritually nuanced indicators among experts with prior engagement in Islamic economics or social deprivation.

TABLE 10. Experts' Consensus Based on Expertise

Experts	Item/Element 1	2	3	4
Poverty & Sustainability	0.353	0.357	0.339	0.361
Development Economics	0.052	0.060	0.339	0.062
Community & Deprivation	0.052	0.060	0.043	0.062
Monetary Economics	0.201	0.195	0.043	0.062
Islamic Economics #1	0.052	0.060	0.043	0.062
Islamic Economics #2	0.052	0.060	0.043	0.062
Islamic Economics #3	0.052	0.060	0.043	0.062
Social Economics & International Economics	0.052	0.060	0.043	0.062
Economics & Islamic Finance	0.052	0.195	0.213	0.191
International Economics & Islamic Finance	0.201	0.195	0.213	0.191
Economics #1	0.201	0.195	0.213	0.191
Economics #2	0.052	0.060	0.043	0.062
Economics #3	0.201	0.332	0.350	0.330
Economics #4	0.052	0.357	0.043	0.062
Threshold Value (d) for each item	**0.116**	**0.161**	**0.144**	**0.130**

Percentage of Experts Consensus (%)	**92.9%**	**78.6%**	**78.6%**	**85.7%**
Fuzzy Score Value (A)	**0.733**	**0.738**	**0.726**	**0.740**
Condition:				
Triangular Fuzzy Numbers				
1. Threshold Value (d) ≤ 0.2				
2. Percentage of Expert Consensus > 75%				
Defuzzification Process				
3) Fuzzy Score (A) > α-cut value = 0.5				

DISCUSSION

The Islamic Multidimensional Poverty Index (i-MPI) has been shown to align broadly with the structure and intent of the global Multidimensional Poverty Index (MPI) developed by Alkire (2014), yet it introduces dimensions informed by Islamic epistemology. These include not only standard poverty dimensions such as education, health, living standards, and income but also a unique "soul" dimension rooted in *maqāṣid al-shariah*. This framework corresponds to key Islamic objectives: education protects religion and intellect (ad-din and al-'aql), health preserves life and progeny (al-nafs and an-nasl), and income and housing secure property (al-mal) (Amiruddin, 2019; Bedoui, 2019). However, while conceptually sound, the i-MPI indicators warrant critical examination to determine their practical utility in urban policy contexts.

For example, the inclusion of farḍ al-'ayn education is a valuable attempt to measure spiritual deprivation, yet it remains difficult to assess consistently across formal education systems, where such instruction may be embedded informally or inconsistently (Ismail, 2012). The current measurement framework does not account for the variability in Islamic religious education delivery across regions and institutions.

Similarly, the use of Islamic insurance (takaful) as a health indicator is relevant given its risk-protection function aligned with Islamic principles (Ahmad et al., 2017; Zulkifli et al., 2019). However, its utility as a poverty measure is limited in contexts where free or subsidized government healthcare remains the primary means of access for low-income households (Abdullah et al., 2020). The absence of takaful does not necessarily imply deprivation, particularly when alternative health protections are already available.

Tabung Haji savings, proposed as an indicator under the living standards dimension, offer symbolic value related to long-term religious aspirations and financial discipline (Ishak, 2011). However, they are less robust as standalone poverty indicators. Households may prioritize other forms of Shariah-compliant savings or investments post-Hajj or opt for different financial strategies altogether. Excluding such behaviors from the i-MPI may inadvertently classify strategic financial decisions as signs of deprivation.

The affordability of education, particularly at the early childhood level, has emerged as an unmeasured yet significant burden on urban households. While current indicators focus on enrollment and years of schooling, they fail to capture the cost barriers that prevent continued participation. Existing literature emphasizes the growing pressure on urban poor families to fund basic education expenses including transportation, uniforms, and learning materials (Ibrahim et al., 2011; Harun, 2007). Including affordability as a sub-indicator could enhance the diagnostic power of the education dimension.

Living conditions remain among the strongest indicators of material poverty, as echoed in both MPI and Islamic frameworks. Studies have shown that overcrowding, dilapidated housing, and inadequate facilities correlate with chronic stress, health deterioration, and reduced

educational achievement (Zainal et al., 2012; Noor Hisham, 2020). While affordable housing programs exist, they are often mismatched with cultural, privacy, and religious values, highlighting the need to rethink what constitutes adequacy in state housing provisions.

From a monetary perspective, the i-MPI's use of both the Poverty Line Income (PLI) and Islamic subsistence criteria (ḥad al-kifāyah) adds depth and religious legitimacy. The latter integrates spiritual needs, family obligations, and moral responsibilities that are typically absent in conventional income measures (Azami, 2021). However, the coexistence of these two indicators introduces a complexity that may not be easily operationalized unless carefully harmonized. Wisor (2012) notes the importance of balancing material and non-material standards in multidimensional indices to avoid misclassification of the poor.

A critical innovation of this study is the inclusion of the soul dimension. Drawing from Salleh (2013), the indicators, i.e., emotion, perception, and deed, aim to reflect inner deprivation. The emotion indicator relates to stress, resignation, or low motivation. The perception indicator gauges internalized stigma and fatalism. The deed indicator ties material deprivation to the inability to fulfill religious obligations such as prayer, fasting, or zakat. While these additions align with Islamic understandings of holistic well-being, they require further methodological refinement. Subjective elements are notoriously difficult to quantify, and there is a risk of overinterpreting non-material hardship as poverty, particularly in diverse urban populations (Strotmann and Volkert, 2018).

Nonetheless, studies have increasingly called for the integration of non-material deprivation into poverty frameworks, particularly in Islamic contexts. Scholars such as Kakwata (2018) and Ostwald (2009) argue for the need to go beyond economic indicators to include psychological and spiritual dimensions. The inclusion of the soul dimension may therefore not only fill a conceptual gap but also provide critical insight into how poverty affects dignity, resilience, and moral agency.

CONCLUSION

This study proposed and evaluated the Islamic Multidimensional Poverty Index (i-MPI) as an alternative framework for measuring urban poverty in a manner consistent with Islamic ethical and spiritual values. The i-MPI expands upon the global MPI by integrating dimensions such as education, health, living standards, income, and soul, aligning each with the five objectives of Maqāṣid al-Sharīʿah. Findings from the expert consensus, obtained through the Fuzzy Delphi Technique, demonstrate strong support for the i-MPI's validity, especially its ability to capture both material and non-material aspects of deprivation. The inclusion of the soul dimension addresses often-overlooked internal aspects of poverty, such as emotional, perceptual, and behavioral challenges, offering a more comprehensive and human-centered approach. Nevertheless, limitations in terms of sample diversity and reliance on subjective indicators highlight the need for broader empirical testing and contextual adaptation. Overall, the i-MPI contributes significantly to the discourse on faith-based poverty measurement and holds strong potential for informing more inclusive, spiritually grounded, and socially responsive poverty alleviation policies.

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