DEVELOPING ZAKAT KEDAH RECIPIENTS INDEX (ZaKRi) AND MODELLING THE CRITERIA OF ZAKAT APPLICANTS' ELIGIBILITY

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Abstrak

Peningkatan jumlah pemohon zakat menyebabkan kesukaran dalam pengenalpastian golongan yang layak menerimanya. Proses pengenalpastian ini memakan masa kerana institusi zakat perlu membuat penilaian dengan teliti bagi memastikan pemohon memenuhi kriteria mengikut prinsip Islam. Kajian ini bertujuan untuk menentukan kriteria penting bagi menilai kelayakan penerima zakat di 12 daerah di Kedah. Maklumat data dan pendapat pakar dikumpul untuk menilai tahap kepentingan kriteria melalui nilai wajaran menggunakan kaedah Entropi dan kaedah Terbaik-Terburuk. Manakala, wajaran agregat digunakan mewakili perkaitan keseluruhan setiap kriteria untuk menentukan keutamaan penerima zakat melalui pembangunan Indeks Penerima Zakat Kedah (ZaKRi). Setiap daerah di Kedah mempunyai perbezaan disebabkan oleh geografi. Ini membuka satu peluang untuk mengkaji signifikansi kriteria berdasarkan geografi daerah. Oleh itu, model Regresi Berwajaran Geografi (GWR) dibangunkan untuk memahami hubungan antara pendapatan dan kriteria zakat lain. Hasil dari nilai wajaran agregat menunjukkan bahawa dari 17 kriteria, pendapatan per kapita, alat elektronik, alat komunikasi dan status pekerjaan adalah penting untuk menentukan kelayakan penerima zakat. Seterusnya, hasil ZaKRi menunjukkan Langkawi mempunyai jumlah penerima zakat yang tertinggi dibandingkan dengan daerah lain sekaligus menunjukkan bahawa Langkawi mempunyai tahap kemiskinan yang lebih tinggi. Manakala hasil dari model GWR menekankan keperluan pengangkutan di semua daerah, khususnya di Langkawi kerana kesukaran mendapatkan komoditi asas di tempat dan pulau terpencil.

Kata Kunci: Kriteria zakat, Entropi, Kaedah Terbaik-Terburuk, Indeks, Regresi berwajaran geografi

Abstract

The increase in the number of zakat applicants has led to difficulties in identifying eligible recipients. The identification process is time-consuming as zakat institutions need to carefully assess applicants to ensure they meet the criteria according to Islamic principles. This study aims to determine the important criteria for evaluating the eligibility of zakat recipients in 12 districts in Kedah. Data and expert opinions were collected to assess the importance of criteria through weighted values using the Entropy and Best-Worst methods. Meanwhile, aggregate weighting was used to represent the overall relationship of each criterion in determining the priority of zakat recipients through the development of the Kedah Zakat Recipient Index (ZaKRi). Each district in Kedah has differences due to geography. This opens an opportunity to examine the significance of criteria based on the geography of the regions. Therefore, a Geographically Weighted Regression (GWR) model was developed to understand the relationship between income and other zakat criteria. The results from the aggregate weighted values indicate that out of 17 criteria, per capita income, electronic devices, communication tools, and employment status are crucial in determining the eligibility of zakat recipients. Furthermore, ZaKRi results show that Langkawi has the highest number of zakat recipients compared to other districts, indicating a higher level of poverty in Langkawi. Meanwhile, the GWR model highlights the need for transportation in all districts, particularly in Langkawi, due to difficulties in accessing basic commodities in remote areas and islands.

Keywords: Zakat criteria, Entropy, Best-worst method, Index, Geographically weighted regression

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CHAPTER 1

INTRODUCTION

1.1 Background of Research

Zakat or alms is the third pillar of Islam. It is part of Muslim's responsibility as it is one of the acts of worshiping Allah Subhanahu Wa Ta'ala (Rahman et. al., 2020; Haron & Rahman, 2016; Bakar & Abd Ghani, 2011). The obligation of performing zakat has been stated in Al-Quran, in Surah Al-Taubah, verse 71, where Allah S.W.T says:

"*And those believers, men and women, are helping the others, they need to be good and avoid evil acts; they pray and give alms and obey Allah and His Messenger. They will be favored by Allah; surely Allah is the Powerful and Wise*".

The main objectives of zakat are to improve the standard of living of less fortunate Muslims and reduce the wealth gap among Muslims by helping the poor and needy (Mansor et. al., 2014; Khaleequzzaman & Shirazib, 2012; Ayuniyyah et. al., 2018). In turn, it helps to extricate humans from starving, certify their social-economic justice and pledge their dignity to carry out their responsibility to Allah S.W.T (Permadia & Gunawan, 2020; Haron & Rahman, 2016). In the religious practice of Muslims, zakat is used as an instrument to abolish inequalities, protect the welfare, develop the infrastructure, diminish poverty and improve the economy in Islamic society (Muhafidin, 2023; Abdullah et. al., 2015; Zakaria, 2014). Zakat should be distributed fairly (Wan Muhammad et. al., 2018; Haron & Rahman, 2016). The distribution of zakat that is trustworthy, transparent and efficient is significant to ensure that zakat reaches the target group. Management of zakat distribution is crucial, and improvements to the management need to be done continuously and viably to achieve

the objectives of zakat as mentioned before. Hence, Islam has outlined some rules and guidelines as follows.

Firstly, the category of people who are eligible to receive zakat or known as Asnaf are clearly stated in the al-Quran, surah Al-Taubah verse 60. From this verse, there are eight Asnaf groups and they are al-fuqara' (or fakir), al - masakin (or poor), amil (or Zakat manager), muallaf (or new Muslim reverter), al-riqab (or servants), al-gharimin (or debtors), fisabilillah (i.e., those who fight in the way of Allah) and Ibn sabil (i.e., musafir on the way).

Secondly, the priority of the Asnaf group should be prioritized to the three groups in the event the other groups did not exist as taught by Imam Syafie, which are fakir, poor and Amil (Mydina, Pitchaya & Azhara, 2019; Lateff, Palil & Hassan, 2014). In this case, most of the other Islamic scholars agreed with Imam Syafie, whereby these three Asnaf groups should be on top of the Zakat recipients list (Rahman et. al., 2020; Ali et. al., 2019; Yusof et. al, 2019; Long et. al., 2018; Abdullah, 2017; Nasution et. al., 2015; Salleh & Ahamad, 2011; Ramli, 2011; Bakar & Abd Ghani, 2011; Yusof, 2006; Wahid et. al., 2004).

The third rule is on the basic need of humans or called as Had Kifayah in Islam, which is similar to the poverty line (Jalil et. al., 2020; Ali et. al., 2014), which is in line with the standard cost of living (Ismail & Aisyah, 2019). Had Kifayah is used as a benchmark to estimate the amount of zakat that should be received by groups of fakirs and poor where the estimation value is calculated by comparing the gross income and minimum expenses of the family or individual. The fourth rule is the Maqasid Shari'ah, which refers to Islamic law that protects the human needs and focuses on five basic human needs, which are al-din (preservation of religion), al-nafs

(preservation of physical-self), al-aql (Preservation of knowledge), an-nasb (preservation of family) and al-mal (preservation of wealth) (Shah & Jamal, 2020; Zakaria, 2014).

The explanation and debate on the criteria of the eligibility of zakat recipients are discussed in detail and thoroughly in texts of the Quran and Hadith by the prominent scholars. Halimatusa'diyah (2015) debated on the definition of "poor" and "needy". She argues that the poor are those who cannot fulfil their basic needs while others suggest that the poor should be defined in relation to the standard of living in their society, and needy is defined as those who are not poor but still require assistance. Meanwhile, "needy" is defined as those who are not poor but still require assistance. Meanwhile, Beik and Ayuniyyah (2018) discuss about the definition and types of asnaf in Islamic jurisprudence and their relevance to zakat distribution. The scholars argue that the concept of asnaf should not limited to the traditional categories of zakat recipients, such as the poor and needy, but also includes those who are eligible to receive zakat based on their specific needs and circumstances. Therefore, it can be concluded that the distribution of zakat is a vital task and zakat institutions require a comprehensive mechanism in distributing zakat as it involves a tedious process and rules in selecting the eligible recipients.

The main activities of the zakat institutions are collecting and distributing the zakat, which involves money management. Besides money management, there is also a series of development programs in upgrading Asnaf life. The charity or help provided must be subjected to the Asnaf needs (Mamat et. al, 2021; Haron & Rahman, 2016), which based on the socioeconomic and current essential consumption needed by them, such as food, living expenses, medical and education (Wan Muhammad et al., 2018; Haron

& Rahman, 2016; Bakar & Abd Ghani, 2011). The summary of the general zakat distribution in Malaysia is shown in Figure 1.1.

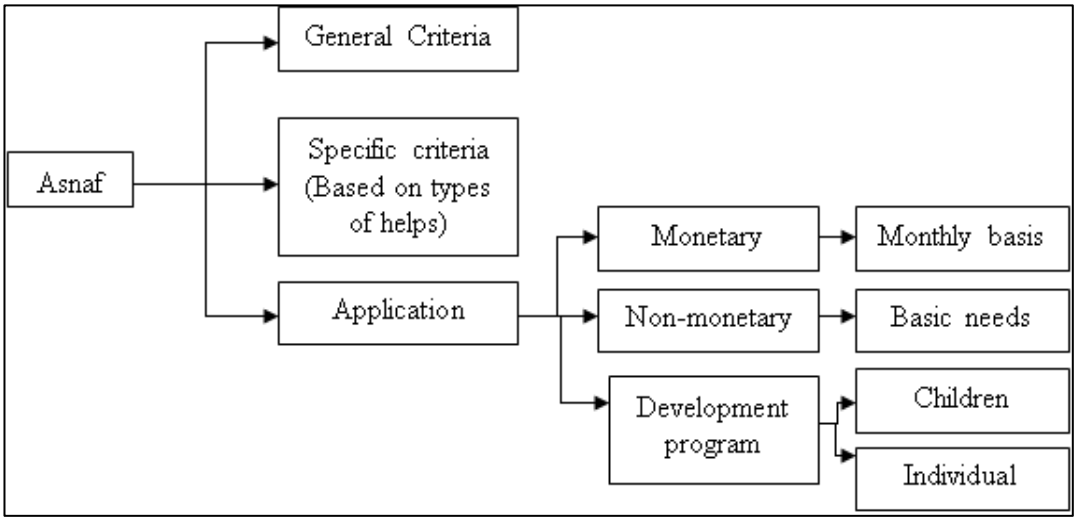


Figure 1.1. Current practice in distributing zakat in Malaysia.

Zakat distribution in monetary form is important because it plays a crucial role in alleviating poverty by providing direct financial assistance to individuals in need where it increases the consumption levels of the recipients which indicates an improvement in their standard of living. Besides, it empowers the recipients by allowing them to decide how to use the funds based on their needs and priorities where it helps to boosts their dignity and self-esteem (Suprayitno, 2013; Suprayitno, 2020).

1.1.1 Functional of LZNK

Like other zakat institutions in Malaysia, the main objectives of establishment of Lembaga Zakat Negeri Kedah (LZNK) are to collect zakat from obligated Muslims and distribute it to asnaf. LZNK also offers various programs aim at improving the living standards of asnaf. It strives to reduce poverty among the Muslim population in Kedah, alleviating their burdens and facilitating an enhanced quality of life. The LZNK website (LZNK, 2023) provides the report on zakat collection and distribution where it allows users to access this information periodically. Figure 1.2 illustrates the trend

in zakat collection from year 2015 to 2021. During this period, the total of zakat collection is increasing every year. This indicates that LZNK has been successful in expanding the number of individuals who contribute to zakat. Indirectly, it also demonstrating their effective efforts in increasing the participation of zakat payers in Kedah.

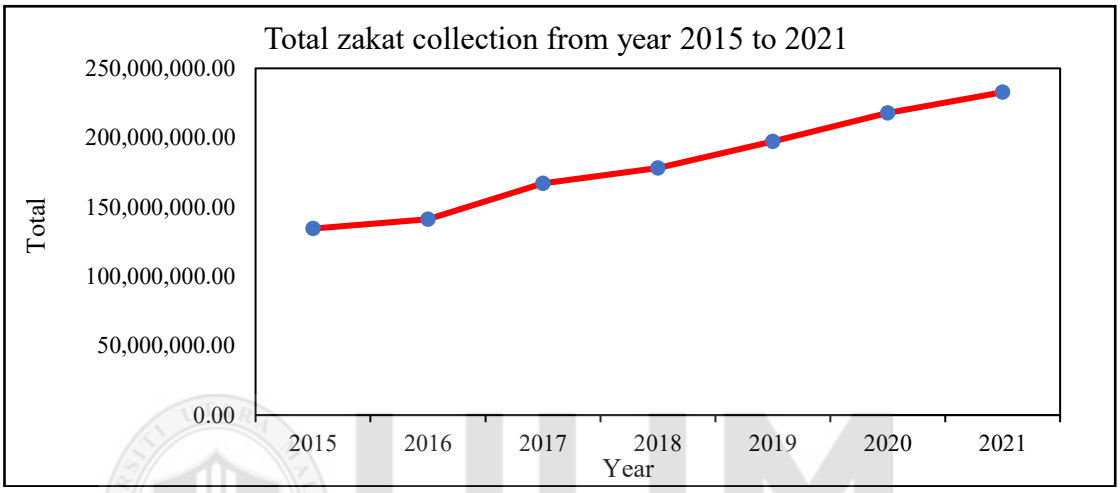


Figure 1.2. Total collection of zakat in Kedah from year 2015 to 2021.

Source: Lembaga Zakat Negeri Kedah (LZNK) website.

Table 1.1 presents the distribution of zakat collection from year 2015 to 2021, categorized into 13 different types of zakat including paddy, livestock, income, business, savings, stock or share, KWSP, gold, silver, minerals. Fitrah, Qadha zakat and Fidyah. Among the categories, the highest amount of zakat collection come from income, business and savings. Zakat of income is contributed by Muslims who have a high salary and meet the criteria for zakat payment. This category reflects the zakat payments made by individuals with substantial earnings. Meanwhile, zakat of business is paid by Muslim entrepreneurs who operate businesses in the Kedah region. This category represents zakat payments from business owners who fulfil the conditions for zakat payment based on their business income. Next is zakat of

Table 1.1

The total of zakat collection (RM) based on zakat categories from year 2015 to 2021.

Categories	2015	2016	2017	2018	2019	2020	2021
Paddy	4,650,469.48	5,163,003.33	4,209,824.62	3,760,222.28	4,442,086.77	5,173,191.83	5,326,933.64
Livestock	19,881.70	14,423.00	26,344.00	13,786.00	45,765.99	32,999.30	28,963.18
Income	82,598,628.71	86,510,206.55	96,513,203.47	110,175,278.31	118,750,237.29	129,634,647.03	135,556,664.85
Business	25,978,174.44	26,036,413.96	40,965,966.94	35,777,560.86	41,541,764.95	47,920,161.73	49,810,438.98
Savings	10,122,670.33	10,948,943.96	11,973,514.11	13,679,497.25	16,604,942.21	18,652,040.77	22,775,775.05
Stock/Share	279,865.73	322,229.92	307,401.36	472,172.82	506,743.62	932,411.45	1,133,863.47
KWSP	1,201,246.90	1,506,994.44	1,619,001.59	1,912,268.76	2,490,664.79	2,621,631.31	4,147,631.07
Gold	847,654.81	915,745.15	1,037,059.63	1,111,864.36	1,326,134.10	1,911,732.09	2,518,962.25
Silver	3,386.00	4,975.50	3,316.10	2,982.00	7,365.69	7,741.95	7,427.05
Minerals	202.50	0.00	0.00	350.00	4.30	2,690.30	81.68
Fitrah	8,128,604.00	8,733,422.00	9,106,802.00	9,600,795.00	10,200,354.00	10,643,279.97	11,144,612.00
Qadha zakat	55,446.66	101,471.84	157,197.88	117,027.60	202,615.11	380,493.09	342,604.97
Fidyah	602,064.70	886,439.15	1,036,334.45	1,469,353.30	1,135,120.56	5,475.60	0.00
Total	134,488,295.96	141,144,268.80	166,955,966.15	178,093,158.54	197,253,799.38	217,918,496.42	232,793,958.19

Source: Lembaga Zakat Negeri Kedah Website.

savings. This zakat is contributed by Muslims who possess a certain amount of savings that meet the zakat eligibility threshold. This category signifies the zakat payments made by individuals who have accumulated savings beyond the prescribed limit. The data provided also shed light on the significant contributions made through zakat of income, business, and savings, reflecting the financial capacity and commitment of individuals in fulfilling their zakat obligations in Kedah.

Next, Figure 1.3 illustrates the trend in zakat distributions in Kedah from year 2015 to 2021. From year 2015 to 2016 the data shows an increase in zakat distributions followed by a decrease in 2017. However, the zakat distributions trend shows an upward trend again in 2018 until 2021. The fluctuations in zakat distributions from year to year can be influenced by various factors such as changes in the number of eligible recipients, shifts in socio-economic conditions, and adjustments in the allocation of zakat funds by LZNK. It is important to note that while there was a decrease in 2017, the subsequent increase in 2018 indicates efforts to enhance the distribution of zakat to eligible recipients.

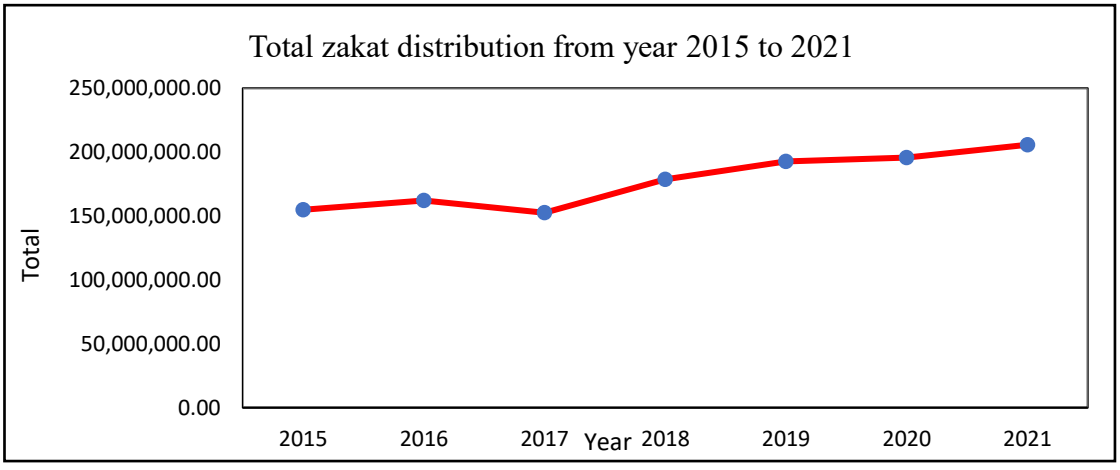


Figure 1.3. Total distribution of zakat in Kedah from year 2015 to 2021.

Source: Lembaga Zakat Negeri Kedah (LZNK) website.

Table 1.2

The total of zakat distribution (RM) based on asnaf categories from year 2015 to 2021.

Categories	2015	2016	2017	2018	2019	2020	2021
Poor	60,483,748.38	67,625,895.84	70,007,703.44	81,687,536.30	98,290,566.48	58,112,487.26	77,885,497.94
Fisabilillah	62,585,716.23	63,463,760.19	52,631,596.92	64,685,352.26	64,778,360.36	66,532,404.50	59,222,849.44
Fakir	8,065,103.90	11,814,985.70	10,693,410.01	165,371.40	127,800.00	45,187,674.32	34,920,575.50
Muallaf	1,902,430.00	1,680,932.17	1,388,810.00	2,174,163.10	3,160,194.01	1,571,320.19	1,440,871.94
Ibni Sabil	189,050.00	245,840.00	163,810.00	224,515.00	180,036.00	1,296.30	71,437.38
Al-Gharimin	32,100.00	38,098.00	57,133.78	1,510,833.88	57,798.40	60,707.43	414,427.38
Amil	21,516,198.52	17,240,616.17	17,591,360.51	28,159,238.06	25,998,379.72	24,214,947.57	28,449,436.42
Ar-Riqab	0.00	0.00	0.00	14,600.00	29,386.15	17,379.90	3,339,725.50
Total	154,774,347.03	162,110,128.07	152,533,824.66	178,621,610.00	192,622,521.12	195,698,217.47	205,744,821.50

Source: Lembaga Zakat Negeri Kedah (LZNK) website.

Table 1.2 shows that zakat is distributed to the eight groups of asnaf which are poor, fisabilillah, fakir, muallaf, ibni sabil, Al-Gharimin, Amil and Ar-Riqab. In 2015, the main groups that received zakat were fisabillillah, poor and Amil. However, from 2016 to 2019, most of the zakat collection is allocated to the poor, fisabillillah and Amil. This indicates a consistent trend in the distribution of zakat during those years. In 2020, the was a slight shift in the allocation of zakat. In that year, zakat was given to fisabilillah, the poor, and fakir. This change suggests a slight deviation from the previous pattern. Meanwhile in 2021, zakat is distributed to the poor, fisabillillah and fakir group. Overall, the primary recipients of zakat consistently included the poor and fisabillillah, while the third group varied between Amil and fakir in different years. It is important to note that there are various factors such as the economic situation, the needs of different groups, and specific criteria set by the zakat institution could influence the allocation decision.

The statistics of zakat collection and distribution in Table 1.1 and Table 1.2 shows that the zakat collection has been increasing annually but the distribution was inconsistent. An assumption can be made that the LZNK's mass advertisements have helped raise awareness among Muslims in Kedah about their zakat obligation, making the collection process more manageable. However, distributing zakat proves challenging due to the rules outlined in previous section and the need for transparency and efficiency under the LZNK management.

1.1.2 Challenges in Managing Zakat Distribution

In recent years, impacting from the COVID-19 pandemic, the number of Zakat applicants is increased as they feel like their living costs are rising and do not have enough basic needs for a living (Ab Rahman et. al., 2022; Adiwijaya & Suprianto,

2020; Ab Rahman et. al., 2017). According to the report released by the Department of Statistic Malaysia in 2019, the percentage of absolute poverty in Kedah is reported to be 8.8%. This means that approximately 8.8% of the population in Kedah is living below the absolute poverty line. The poverty in Kedah is considered as higher compared to other states in Malaysia. Meanwhile, the average monthly consumption expenditure per household is at the average RM3, 359 (DOSM, 2019a). It also indicates that Kedah has more poor people and higher minimum household expenditure.

With an increase in zakat applications, LZNK makes aware that its institution needs to process the application promptly. Nonetheless, the selection of eligible zakat recipients remains a time-consuming as the process of identifying the eligible recipient must be done meticulously to ensure zakat is distributed to the right person. The identification process is either delayed the decision outcome or produced the incorrect decision and caused the zakat to be distributed to unentitled recipients, resulting in a bad image and reputation for the Zakat institutions. The public's concern about how zakat is being managed tarnished the society's trust towards its competency and transparency. Given all these challenges, the Zakat institutions need to intervene and innovate its current mechanism in identifying Zakat recipients. Exposing the procedure or process of Zakat institution on its distribution activities may help in cultivating the motivation and awareness of paying zakat in society.

To date, there is a rich body of literature on how to measure the Zakat institutions' performance at the strategic level. However, little research has been done on how to operationalise it, especially about producing a decision for better managed the eligible asnaf selection in more transparent and efficient ways. Current management of zakat

recipients' selection requires some reconfiguration, which is more data-centrist delivery, involving more accurate expert judgment in the decision-making process and ultimately, it must comply with Islamic rules.

Several issues related to eligibility of Zakat applicants have been examined in this study. One of the issues is the process of determining the main criteria that can characterise the Zakat applicant's eligibility. Another issue is on the significancy of the criteria determined towards the profiling of the zakat applicants as the relevancy of the criteria maybe vary among the Kedah's districts. Due to these two reasons, they have motivated the researcher of this thesis to develop a comprehensive zakat recipient index that serve a purpose in determining the priority of recipient criteria and construct a spatial regression model in examining the significancy of the criteria towards the zakat recipients' profile (i.e., income) in each Kedah's districts. Further discussion on the development of the statistical index and the construction of the spatial regression model are presented in the subsequent sections (i.e., Section 1.1.2 and Section 1.1.3) as follows.

1.1.3 Development of Statistical Index

Index is derived from multiple items where the items are combined into a single measurement or scale. This method can quantify elements that cannot be measured directly (Khalid et. al., 2022; Sullivan, 2002). Besides, index can be used to evaluate complex issues, like the issue of combining the quantitative and qualitative elements (Rahimipour et. al., 2022; Chong, 2020; Zainol et. al., 2016) and multicriteria issues (Kasim & Jemain, 2020; Jemain, 2004). Takril and Othman (2020) and Sullivan (2002) stated that index could be developed using a series of variables and it is capable of generating results by ranking such as ranking the level of importance of the criteria of

zakat recipient. In building the index, all the criteria that have been identified is met in one mathematical equation without eliminating the basic properties of each criterion because each of the equations used in constructing the index has a weighted score coefficient. Nevertheless, the contents (i.e., criteria and data) used in developing the index must include the quality of the information, accuracy, timeliness, format and ease of use (Hamzah et, al., 2022; Cho & Park, 2001; Doll &Torkzadeh, 1988).

Many indices have been developed in most research fields in Malaysia, including zakat. However, the zakat related indices mostly studied about the satisfaction and confidence in Zakat institutions and zakat institutions' performance in managing the zakat distribution activities. The role of zakat institution in managing the distribution is reviewed to helps the zakat institution to improve their performance and the level of confidence of society towards zakat institutions (Abd Wahab et. al., 2020; Makruflis, 2019; Wahid & Ahmad, 2014). Next, the zakat related indices also studied about the effectiveness of zakat policies, zakat collection and distribution. Besides, the index is used to identify the factors, processes and constraints that can improve the poor's life and the indicators that influence the satisfaction of Zakat payers and zakat recipients. The indexes-related to zakat that has been developed are Zakat Effectiveness Index (ZEIN) (Niswah, 2022; Takril & Othman, 2020; Abdullah et. al., 2012), Multidimensional Poverty Index (MPI) (Aziz et. al., 2020), and Service Quality Index for Zakat institutions (Abd Wahab et. al., 2020; Wahab et. al., 2016). However, the indices mentioned above were focus on solving problems related to expenditure and basic needs of poor to sustain, non-monetary indicators that focusing on Maqasid Shariah and the satisfaction of zakat payers and zakat recipient. Further investigation on indices is needed since the field of studies and the approach used to develop the

index is different from the researcher main focus, which is exploring alternative method in determining the eligibility zakat recipients.

This study uses the multicriteria index method to develop an Index of Zakat Recipient for Negeri Kedah or ZaKRi, focuses on verifying the level of importance and ranking the criteria that can be used to determine the eligibility of zakat applicant. The development of the Index considers the aggregated weight approach, which combining the objective and subjective weights. The outcome of ZaKRi has been reported according to Kedah's district and the criteria to identify the Asnaf eligibility.

1.1.4 Estimating the Effect of Zakat Criteria on Applicant's Income Using the Geographically Weighted Regression (GWR)

Although the criteria determined in ZaKRi are considered crucial to determine the priority of zakat applicants, their applicability may not be universally significant across the districts. It is because each district may have unique characteristics, demographics, and socio-economic factors that can influence the relevance and significance of the criteria for zakat applicants. Therefore, it is necessary to assess the applicability of the criteria locally in specific districts. The assessment can be done by using the Geographically Weighted Regression (GWR). The GWR is an experimental technique or also known as spatial regression. It is an extension of the Ordinary Least Square regression (OLS), where spatial effect is taken into account and each location or places with unique characteristics such as economic and demographic condition is studied (Zhang et. al., 2019; Grubesic et. al., 2012).

In the case of ZaKRi development, it is inaccurate to assume that all of the districts used the same criteria to identify the recipient with different types of economic and demographic condition. Therefore, the information of each location or districts in

Kedah is necessary to be used for observation. The advantage of using the GWR is the coefficient values in the GWR can estimate accurate predictions of the response variables of the research at each location area. In this study, the response variables refer to the criteria that can identify the asnaf' eligibility (Xu & Ouyang, 2018; Zakaria & Rahman, 2017). In other words, the GWR allows the local variations in the change rate in determining the model's coefficients specific to a specific location (Zhang et. al., 2019; Grubesic et. al., 2012) and technically, it considers as a sample-point-based technique and can be used to produce localized statistics. Besides, the spatial heterogeneity problem is addressed in the GRW, which is occurred when the effects on relationship among the variables studied are different in varies location (Hu et. al., 2022; Cameron et. al., 2016). For example, the relationship of the criteria in Baling and Yan has a possibility to be different. Previously, GWR has been applied in various research fields, such as crime studies (Grubesic et. al., 2012; Ye & Wu, 2011; Huang & Leung, 2002), traffic accident and death (Erdogan, 2009), alcohol outlet density and violence (Horsefield et. al., 2023; Cameron et. al, 2016) and mortality analysis (Cupido et. al., 2021; Holt & Lo, 2008). However, GWR has not yet been applied in research related to zakat.

In this study, incorporating a spatial perspective through the use of GWR can provide valuable insights into the relationship between location and income of the asnaf. Total income is chosen as a dependent variable because it represents the economic condition and category of the asnaf. It is a suitable measure as it reflects the economic condition and categorization of the asnaf. Additionally, it can be used to assess poverty levels and the ability of the asnaf to sustain their livelihoods. By considering total income as the dependent variable, researchers can examine how income levels vary across different locations. The spatial component is crucial because economic conditions can

significantly differ from one location to another, influenced by factors such as local industries, employment opportunities, and cost of living.

1.2 Problem Statement

The main challenge in selecting the zakat recipients is on determining the characteristics or criteria that can measure the eligibility of an individuals and their values as they are volatile, always change constantly over time and location, especially on the criteria that present the structure and socioeconomics of a district, state or country. This situation occurs due to income inequality and household consumption is increasing (Ayyash & Sek, 2020; Piao et. al., 2023). For example, at some point, the indicators of poverty in the Alor Setar district area may be different from the Yan district area. Therefore, the indicators to be used in determining the zakat recipient need to be evaluated regularly to produce a suitable measurement and composition, especially to distinguish between the asnaf group of poor and needy according to the actual level of socioeconomic in Kedah, detailing to districts. Besides, some of the criteria are difficult to measure, for example, the level of health (disability or illness) and individual personality. The evaluation of the criteria requires expert review to understand the nature of the criteria. For example, the zakat applicants' health issues can be determined by the government's clinic or hospital's medical report.

In general, there no specific index develops to identify the eligibility of zakat applicants to receive zakat. What has been practiced before is a focus on the judgment of the Amil based on the criteria outlined in the form used, without giving consideration to data information or a combination of both pieces of information to identify zakat recipients. Therefore, determining the criteria is crucial and serves as the first step in the process of identifying zakat recipients. It is also essential to

determine the level of importance of the criteria because it helps to prioritize and establish the eligibility of each potential recipient. In addition, consideration on data information and aggregated information between expert opinion and data information is conducted in order to determine the most important criteria.

The criteria used by LZNK to identify the eligibility of applicants might be different due to spatial variation. The criteria for identifying the eligibility of applicants need to be revised to each specific area of focus due to spatial variations. Technically, the criteria are interrelated, so a change in one criterion can potentially impact other criteria that determine an individual's eligibility to receive zakat. Therefore, this study intends to determine whether each of the districts uses different criteria to identify the eligibility of applicants, despite the differences in geography. The criteria used to model the criteria is the same as in ZaKRi where applicants' income as dependent variable and other criteria as independent variable.

Therefore, this study aims to address the existing gap by developing a Statistical Index and a Geographically Weighted Regression (GWR) model. The ZaKRi index serves the purpose of verifying the level of importance of criteria to determine the eligibility of priority of applicants to receive zakat where consideration of data information and expert opinion is taken into account. Meanwhile, the GWR model examining whether there are difference criteria used in each district due to the difference in the geographic condition of the area. This model can be used to minimize subjective biases by using standardized criteria where it ensures fair and unbiased assessment of zakat applicant eligibility.

1.3 Research Questions

The research intends to solve the problems of the zakat recipient selection. As such, the following research questions have been developed to guide this study as follows:

i. What are the criteria to identify the zakat recipient eligibility in Kedah?

ii. How to determine the importance of the criteria identified?

iii. How to identify the eligibility of the zakat recipient in Kedah?

iv. How to determine the significance of criteria by district in Kedah?

1.4 Research Objectives

This study aims to develop a model of the eligibility status of Zakat applicants in Kedah. The specific objectives are:

i. To identify the criteria for zakat recipient eligibility in Kedah.

ii. To determine the weightage of the criteria identified in (i).

iii. To develop an index of the zakat eligibility in Kedah.

iv. To determine the significance of criteria by district in Kedah.

1.5 Research Scope

This study falls under the research topic of zakat distribution management, concentrating on the decision-making model of zakat recipients' eligibility. The main scope of this study is to identify the criteria that can be used to determine the eligibility of zakat recipients in each of the districts of Kedah. Through this study, ZaKRi index for Kedah is developed where MCDM methods were applied in order to determine the weight of the criteria and the priority of the individuals to receive zakat. Next, a GWR model is developed to determine the significancy of the criteria for each of the districts.

1.6 Significance of The Research

From the body of knowledge perspective, the information presented in this study can be utilized for future studies. The methods employed in this study, namely BWM and GWR, can serve as references for other researchers, particularly because these methods are less commonly used in the field of zakat. The comprehensive insights provided by this study can generate new ideas for enhancing the zakat distribution process. This study also demonstrates the development of the Zakat Kedah Recipient Index (ZaKRi) using the objective and subjective weights. Additionally, a regression model is constructed to examine the relationships between the identified criteria and the primary criterion representing the asnaf groups of the poor and needy.

From a real-world perspective, through this study, the problem of determining the criteria that fulfil the Islamic law requirement is solved, which is not applied in the construction of the Poverty Line Level (PGK) or Multi-Dimensional Poverty Index (MPI) in Malaysia. It also can greatly assist zakat institutions, especially LZNK, in effectively and transparently managing zakat. The study collects reliable information on the criteria to identify the important factors in determining recipients. The developed model can identify and prioritize the most relevant factors, resulting in more accurate evaluations. By employing standardized criteria, the model reduces subjective biases and ensures a fair and unbiased assessment of zakat applicants' eligibility. The unique aspect of the regression model develop is their commitment to adhering to Shariah law. Moreover, the application process for zakat can be expedited with the use of this developed model. Meanwhile, from the researcher's point of view, this study is essential as no previous research has been conducted in identifying the priority of the criteria for determining applicant's eligibility.

1.7 Summary of Chapter

This chapter discussed the background of the research that focusing on the problems of identifying the criteria used to determine the eligible Zakat recipients. These problems have led to the formulation of several research questions which are addressed through several research objectives. Next, the chapter outlines the research scope and its significance to highlight the contribution of this study towards the body of knowledge and community. In the subsequent chapter, a comprehensive summary and discussion of previous research conducted by various scholars is presented.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature related to the Zakat distribution topic. Previous studies conducted by numerous researchers are reviewed to understand the Zakat distribution system, especially when selecting the Zakat recipient. This chapter is organized into five main sections, as follows. In the first section, an overview of the Zakat distribution system is explained in Section 2.2 covering the Had Kifayah (section 2.2.1) and Maqasid Shariah (section 2.2.2). Then, discussion about index development studied in the previous research presented in Section 2.3, covering objective weight (Section 2.3.1), the subjective weight (Section 2.3.2), and the development of index (section 2.2.3). Section 2.4 summarizes the statistical or mathematical approach used under the research related to Zakat modelling. Finally, the research gap is discussed in the last section of this chapter (Section 2.5).

2.2 Overview of the Zakat Distribution System

In the zakat distribution system, two main activities have been conducted: distributing the zakat and development program for Asnaf. In zakat distribution, zakat recipients are selected from the Asnaf group based on specific criteria that can be used to identify the recipient's eligibility (Iswara et. al., 2017). Zakat distribution is useful when the eligible recipient is identified, Asnaf can improve their living and free from the Asnaf group, the income gap between the rich and the poor can be reduced (Zakaria, 2014; Wan Muhammad et. al., 2018) and be part of the zakat payers (Mahmood et. al., 2021; Yusop et. al., 2013). However, there is a weakness in distributing zakat. The zakat institutions still struggling to identify the specific criteria that should be used in

determining the zakat recipient, especially when the criteria need to fulfill the Islamic law (Rofiq & Chariri, 2020; Wan Muhammad et. al., 2018; Zakaria, 2017) in order to identify the poor and fulfil the necessary expenses as stated in Islam (Bhari et. la., 2018). This situation has led the researchers to conduct a study related to the effectiveness of Zakat distribution, which can also be associated with the zakat institution's performance. Meerangani (2019), Al Haq and Wahab (2017), Ismail and Hussain (2017), Muda (2014), Zakaria (2014), and Lateff et. al. (2014) are the researchers who studied the issues related to the effectiveness of Zakat distribution in Malaysia. Since this issue is concomitant with the zakat performance, another research is conducted to measure the performance of the zakat institution. For example, research by Abd Rahman and Jusoh (2018) and Salleh (2014). Undeniably, zakat activities such as distribution activity indirectly affect the zakat performance and due to this issue, the effectiveness of the activities is measured.

Therefore, a proper system is needed in order to manage and distribute the zakat effectively. However, there are a policy or law and problems that need to be followed and faced by zakat institutions. The discussion on the Had Kifayah and Maqasid Shariah is discussed in Sections 2.2.1 and 2.2.2 respectively.

2.2.1 Had Kifayah

Researchers in the previous studies have given different definitions for the term "Had Kifayah". Had Kifayah can be defined as the minimum amount of expenditure for basic requirements (Ismail & Aisyah, 2019; Ali et. al., 2014; Possumah, 2016). Had Kifayah also can be defined as a measurement of the economic ability as a covenant to the survival of an individual (Rahman et al., 2020), the rate that should be used in helping the poor in satisfying their necessary expenses (Bhari et. al., 2018) and

measurement of the level of poverty, which based on the income and liability size (Talib & Ahmad, 2018). Indirectly, Had Kifayah refers to monetary perspective in measuring poverty (Rasool & Amran, 2017; Rasool & Salleh, 2014; Rasool et. al., 2012; Bakar & Abd Ghani, 2011). In Selangor, Had Kifayah is known as Zakat distribution to the poor and fakir based on their basic needs, Pahang defines Had Kifayah as the rate of income adequacy in identifying the poor and Fakir (Talib & Ahmad, 2018), and in Kelantan Had Kifayah is identified as Zakat poverty line (Ali et. al., 2016).

Even though each state has a different way of defining Had Kifayah, the primary purpose of the Had Kifayah for each Zakat institution is to determine the level of necessity needed by a household for living. Had Kifayah also focuses on certifying life's survival and dependence (Bhari et. al., 2022; Rahman et. al., 2017). In this study, Had Kifayah is defined as a minimum rate of cost living for a person's essential requirement, and it can be customized according to the current living cost.

From the literature reviewed, it can be concluded that Had Kifayah and the poverty line are explaining the same thing from the perspective of socio-economic. However, Had Kifayah is defined from religion and morality (Rahmat & Nurzaman, 2019) and the Zakat institutions calculate it. Meanwhile, the poverty line index is calculated by the Federal Governments of Malaysia through the Economic Planning Unit (EPU) (Tedong et. al., 2022; Rasool et al., 2012). The poverty line cannot be used as Had Kifayah since the Islamic jurisprudence needs to be followed in Had Kifayah. Nevertheless, the criteria used as the indicator in choosing the eligible recipients for Had Kifayah and the poverty line are merely the same as shown in Table 2.1. Nevertheless, there is a question of whether these criteria relevant to be used for Had

Kifayah. One particular concern is the criteria that can be used in Had Kifayah must be chosen based on the Islamic view, where these criteria must have complied with Islamic law, Maqasid Shariah.

2.2.2 Maqasid Shariah

Maqasid Shari'ah can be defined as the objectives or purpose behind Islamic law (Alias, 2021; Kasri, 2016; Zakaria, 2014; Haron & Rahman, 2016), where it protects human needs, which include preservation and protection of the environment and health (Al Haq & Abd Wahab, 2019). According to Fisol & Hassan (2019) and Zakaria (2014), Maqasid Shariah focuses on five basic needs, which are al-din (preservation of religion), al-nafs (preservation of physical-self), al-aql (Preservation of knowledge), an-nasb (preservation of family) and al-mal (preservation of wealth).

Al-din can be defined as the preservation of religion that focuses on seeking blessings from Allah SWT. Religion is an essential basic need in human life. As Muslims, they need to obey the Shariah and seek blessings from Allah in order to live in harmony. Muslims are required to perform five religious obligations such as prayer, fasting in Ramadhan, Paying Zakat and perform Hajj to those who can afford. Meanwhile, al-nafs refers to ways of nourishing human welfare. Basic needs such as healthcare, nutrition, shelter, utilities, clothing and transportation are needed to avoid harming ourselves, families and other parties. Next is al-aql that protect Muslim's mind to amicable with religion. Al-aql is related to the preservation of knowledge, such as intellectual levels and skills that compromise psychological factors. The psychological factors involved in al-aql include managing stress, education completion and social activities (Fisol & Hassan, 2019; Zakaria, 2014).

Maqasid Shariah also emphasizes the importance of family or known as al-nasb. Al-nasb guarantees the pride and dignity of family and ancestors are protected. Possessing parenting skills, ethical knowledge, religion and inculcate children with knowledge is essential, especially when protecting pride and dignity is an obligation to Muslims. Lastly is the preservation of wealth or al-mal. Al-mal is served for always put effort into developing their self and family. Owning wealth and assets is encouraged to all Muslims and apart from wealth, Muslims should generate their incomes to avoid relying on others (Fisol & Hassan, 2019; Zakaria, 2014). Owning wealth, assets and generate incomes can guarantee a Muslim's life today and in the future and maintain society's tranquillity. Besides the five basic needs, some *maslahah* needs to be fulfilled, such as *daruriyyat* (necessities), *hajiyyat* (complimentary) and *tahsiniyyat* (embellishment). The stages of the maslahah are critical and daruriyyat will be given a priority and *tahsiniyyat* can be fulfilled when *daruriyyat* abd *hajiyyat* has been fulfilled (Bakar & Rahim, 2021; Adnan et. al., 2017).

For the past few years, there are limited research conducted about the usage of Maqasid Shariah in identifying the criteria of the Zakat recipient. However, this study revealed that most research studied the criteria of the Had Kifayah have embedded the Maqasid Shariah in their studies. However, the researchers did not state it clearly since the research topic is not about identifying the criteria for Maqasid Shariah itself. Nevertheless, a few articles discuss Had Kifayah or the poverty line and the Maqasid Shariah view, as tabulated in Table 2.1. The table shows that Rasool et. al. (2011) use health and medication, transport, accommodation, clothing, and food as the criteria. Meanwhile, Yusof et. al. (2019) and Rasool et. al. (2011) considered additional criteria, such as the age of members in the household, family problem, income, skills, employment status, number of members in the household, marriage status, number of

assets and children and transformation. Most of the criteria used in identifying the eligible recipients are health and medication, transport, clothing, employment status, and food.

Table 2.1

List of criteria used as the indicators of the Maqasid Shariah.

Criteria	1	2	3	4	5	6
Age of the members in the household	x		x	x		
Family problem						x
Health and medication	x	x		x	x	x
Lack of skills						x
Number of members in the household			x			
Transport	x	x		x	x	
Accommodation.		x				
Clothing	x	x			x	
Employment status				x	x	x
Food	x	x		x	x	
Marriage status	x			x		x
No asset (wealth)	x					x
Number of children				x		x
Transformation			x			
Shelter	x	x		x		
Education	x			x	x	
Disable				x		
Gender				x		
Expenditure	x					
Phone (Home/personal)	x					
Electricity	x					
Water	x					
House furnishings	x					
Smoking status	x					
Source of income	x					
Household area	x					
Home condition	x					

Note: 1: Lembaga Zakat Negeri Kedah (2020); 2: Rasool et. al. (2011); 3: Rasool et. al. (2011); 4: Rasool et. al. (2012); 5: Rasool & Amran (2017); 6: Yusof et. al. (2019).

Table 2.2

Mapping Table 2.1's criteria and the five basic rules in Maqasid Shariah.

No	Criteria	Definition of criteria	Authors
1	Number of children	A number of children live in the same house and still under their parents' responsibility.	Al-din, Al-nasb, Al-mal
2	Age of the members in the household	The age of all persons who live in the same house needs attention to educate and maintain the boundaries between family members.	Al-din, Al-nafs, Al-aql, Al-nasb
3	Number of members in the household	The number of people that live in the same house, either family members or non-family members.	Al-din, Al-nafs, Al-nasb
4	Family problem	A challenge or burden faces individuals or families that can affect the whole family, such as parenting issues, illness, gambling addiction, and a family member's death.	Al-din, Al-nafs, Al-nasb
5	Health and medication	It includes prevention, cure and understanding about the disease that can affect the mental and physical health, leading to other consequences involving families and communities.	Al-din, Al-nafs, Al-nasb
6	Lack of skills	Incompetence to do something correctly or well leads to lower self-esteem, lost confidence, and compares themselves with others.	Al-aql, Al-mal
7	Transport	All the costs paid by the house members such as fares and other related costs fr traveling or moving from one place to another place that simplifies daily affairs.	Al-nafs, Al-nasb, Al-mal
8	Accommodation	A safe place or a building, a family or individual can live or stay alive and safe from jeopardy.	Al-din, Al-nafs, Al-Aql, Al-nasb
9	Clothing	An attire is worn on the body, clean and following the religious demands.	Al-din, Al-nafs, al-nasb

10	Employment status	An individual's working status either working as a full-time employee, part-time, working temporarily or otherwise, and that person doing legal and religious work.	Al-din, Al-nafs, Al-nasb, Al-mal
11	Food	Nutritious food or substances that can be consumed to preserve the life and growth of an individual and their family and allowed by religion.	Al-din, Al-nafs, Al-aql, Al-nasb, Al-mal
12	Marriage status	An individual is legally married and recognized by their jurisdiction.	Al-din, Al-nafs, Al-nasb, Al-mal
13	No asset	The amount of money or wealth owns to buy an individual to have a good life or to secure life in the future.	Al-din, Al-nasb, Al-mal
14	Transformation	Changes are made in order to improve their living.	Al-din, Al-nasb, Al-mal
15	Shelter	A safe place that can protect an individual or family from bad weather or danger.	Al-din, Al-nafs, Al-aql, Al-nasb, Al-mal
16	Education	A process of receiving systematic instruction or knowledge to develop high-quality people for themselves, family and country.	Al-din, Al-nasb, Al-aql, Al-nafs
17	Disable	A disease or injury is caused by natural creation or accidents that limit someone's movements, activities or senses and prevent them from working to support themselves and their families.	Al-din, Al-nafs, Al-nasb
18	Gender	The sexes of an individual. In Islam, a female is the weakest group and is preferred in most of the situation.	Al-din, Al-nafs, Al-aql, Al-nasb, Al-mal
19	Expenditure	The amount of money spends on fulfilling the basic needed of an individual of a family to survive.	Al-din, Al-nafs, Al-nasb
20	Communication tool	A communication tool is needed to communicate, search for information, and part of an individual's necessities in the modern world.	Al-nafs, Al-aql
21	Electricity	It is a form of energy needed by almost all people in conducting their daily activities, such as working and worshiping comfortably.	Al-din, Al-nafs, Al-aql, Al-nasb, Al-mal

22	Water	The source of clean water for people to drink, cook, clean up, and worship to maintain hygiene and health.	Al-din, Al-nafs, Al-aql, Al-nasb, Al-mal
23	House furnishings	All the equipment needed at home for comfort.	Al-din, Al-nafs, Al-nasb, Al-mal
24	Smoking status	A smoking habit of an individual.	Al-din, Al-nafs, Al-aql, Al-nasb, Al-mal
25	Source of income	The status of income received, which should form the right source and valid in terms of religion and law.	Al-din, Al-nafs, Al-aql, Al-nasb, Al-mal
26	Income	Individuals or households do all kinds of work in order to gain money to support themselves and their families.	Al-din, Al-nafs, Al-aql, Al-nasb, Al-mal
27	Household area	The housing area of an applicant is either in a rural area or in an urban area.	Al-din, Al-aql, Al-nasb, Al-mal
28	Home condition	The state of an applicant's home either in excellent or poor condition and comfortable to live in.	Al-din, Al-nafs, Al-nasb, Al-mal
29	Residential ownership status	The residential status of the individuals or households is the property of individuals, rent or inheritance.	Al-din, Al-nafs, Al-nasb, Al-mal

The criteria in Table 2.2 are collected from all sorts of documents and literature review. Then, the mapping of the criteria and the five basic rules of Maqasid Shariah is conducted where there are only specific criteria fulfilling all the rules of the Maqasid Shariah.

From our analysis, most of the rules of Maqasid Shariah have been fulfilled by the criteria, as shown in Table 2.2 where most of the researchers applied the rules of Al-Nasb, Al-Din and Al-Nafs in the Zakat recipient selection process. The number of rules of Maqasid Shariah is counted to determine the priority of the rules used in identifying the eligibility of the recipient. The total number of Maqasid Shariah rule based on the criteria in Table 2.2 is shown in Table 2.3 below.

Table 2.3

The total number of Maqasid Shariah rule based on the criteria in Table 2.2.

Rule of Maqasid Shariah	Number of Rule
Al-Din	25
Al-Nafs	23
Al-Aql	13
Al-Nasb	26
Al-Mal	18

Table 2.3 shows that the highest total number of rules of Maqasid Shariah are 26 which is al-nasb (or preservation of family) followed by al-din (or preservation of religion) with total 25, al-nafs (or preservation of physical self) with total 23, al-mal (or preservation of wealth) with total 18 and al-aql (or preservation of knowledge) with total 13. An-nasb is considered as important to keep the pride of an individual, family and ancestors as it is an obligation to Muslims. Furthermore, the rules of Maqasid Shariah are important to certify that the criteria used to identify the zakat recipient fulfilled the Islamic rules and prioritize the needs of the religion and recipient.

2.2.3 Mapping the Criteria of Had Kifayah, Poverty Line and Maqasid Shariah

The criteria discussed under the concept of Had Kifayah in the previous studies align closely with the principles of Maqasid Shariah as the the identified criteria must adhere to Islamic law (Radzi & Ab Rahman, 2019; Deuraseh, 2012). To illustrate the relationship between Had Kifayah, the poverty line, and Maqasid Shariah, a comparison is presented in Table 2.4.

Table 2.4

Mapping the Criteria of Had Kifayah, Poverty Line and Maqasid Shariah

Criteria	Had Kifayah	Poverty Line	Maqasid Shariah
Income	x	x	x
Source of income	x		x
Gender	x	x	x
Disability	x	x	x
Age	x	x	x
Health	x	x	x
Illness	x	x	x
Marriage status	x	x	x
Employment status	x	x	x
Number of children	x	x	x
Number of members in the household	x	x	x
Number of dependents	x	x	x
Accommodation	x	x	x
Expenditure (food, transport, electricity, water, house furnishing)	x	x	x
Smoking status	x		x
Alcoholic drinks		x	
Household area	x		x
Home condition	x		x
Residential ownership status	x	x	x
Residential age		x	
Communication tools			x
Electrical and water supplier	x	x	x
Educational and health facilities		x	
Garbage collection facilities		x	
Household appliances and facilities		x	
Home appliances and maintenance		x	
Gas and fuel		x	
Debt		x	

The table demonstrates that a majority of the criteria listed are utilized in all three measurements. Notably, certain criteria, such as source of income, smoking status, household area, home condition, and communication tools, are excluded from the

poverty line measurement. Conclusions drawn from this comparative analysis suggest a significant overlap in the criteria used for Had Kifayah and the poverty line, indicating their alignment with the five basic needs outlined in Maqasid Shariah. Consequently, the criteria outlined in Table 2.4 can serve as a reference for selecting eligible Zakat recipients. However, it is crucial to note that expert opinion is indispensable in verifying the appropriateness of these criteria for the selection process. The nuanced nature of applying Islamic principles to practical considerations necessitates the guidance of experts to ensure a comprehensive and just approach to identifying those in need of Zakat assistance.

2.2.4 Summary of Section

The majority of previous studies concentrated on assessing the effectiveness of zakat distribution, evaluating zakat institution performance, and analysing the effects and impacts of zakat activities on various aspects, including asnaf, society, formal institutions, and the income of asnaf. Notably, discussions related to Had Kifayah and Maqasid Shariah have also garnered attention. However, there is a limited number of studies that specifically focus on zakat applicants and the intricacies of zakat distribution to this group. Thus, the present study engages in a comprehensive review of past literature to identify criteria associated with Had Kifayah, the poverty line, and Maqasid Shariah. The objective is to pinpoint criteria that align with Islamic laws and principles. The lists of the criteria collected from all sorts of documents and literature review is presented in Table 2.5.

Table 2.5

The list of zakat recipient criteria based on documents and literature review.

No	Criteria	Definition of criteria	Authors
1	Head of the family total income	All types of work done by individuals or members of the household that become their source of income to support themselves and their families.	Lembaga Zakat Negeri Kedah (2020), DOSM (2019).
2	Gross Household income	Total income earned by a household whether in cash or otherwise that can be referred as gross income.	Lembaga Zakat Negeri Kedah (2020), DOSM (2019).
3	Source of Income	The income used to support the individuals and their families comes from permissible sources or *'Halal'* and legal in terms of law and religion.	Lembaga Zakat Negeri Kedah (2020), DOSM (2019).
4	Employment Status	All types of work done by individuals or members of the household that become their source of income to support themselves and their families.	Yusof et. al. (2019), Rasool & Amran (2017), Rasool et. al. (2012), Idris & Selvaratnam (2012), Rasool et. al. (2011), DOSM (2019).
5	Suffering from chronic disease	Individuals or members in the household that suffer chronic illness and receive ongoing treatment that limits them to work to support themselves and their families.	Lembaga Zakat Negeri Kedah (2020), Yusof et. al. (2019), Ali et. al. (2016), DOSM (2011), Rasool & Amran (2017), Rasool et. al. (2012), Rasool et. al. (2011).
6	Illness	Individual conditions or members in the household that causes them unable to move to perform daily activities and work to support themselves and their families.	Lembaga Zakat Negeri Kedah (2020), Yusof et. al. (2019), Ali et. al. (2016), DOSM (2011), Rasool & Amran (2017), Rasool et. al. (2012), Rasool et. al. (2011).
7	Disable	Individuals or members in the households that suffer from physical disabilities that limit them to move and work and their disability status is confirmed by the health department.	Lembaga Zakat Negeri Kedah (2020), Yusof et. al. (2019), Ali et. al. (2016), DOSM (2011), Rasool & Amran (2017), Rasool et. al. (2012), Rasool et. al. (2011).
8	Age	The age of the individuals of the households who eligible to receive assistance and have reached puberty and can distinguish between good and bad things and able to work to support themselves and their families.	Lembaga Zakat Negeri Kedah (2020), DOSM (2019), Ali et. al. (2016), Possumah (2016), Ali et. al. (2014), Rasool et. al. (2012).
9	Gender	The gender of an individual or member of the household whether male or female.	Lembaga Zakat Negeri Kedah (2020), DOSM (2019), Ali et. al. (2016), Possumah (2016), Ali et. al. (2014), Rasool et. al. (2012).
10	Marriage Status	The marital status of an individual whether married, single or widowed.	Rasool & Amran (2017), Rasool et. al. (2012), Idris & Selvaratnam (2012), Rasool et. al. (2011).

11	Communication tools	All types of communication tools used by individuals or member of households to communicate.	Lembaga Zakat Negeri Kedah (2020), DOSM (2020).
12	Electrical and water supplier	The inhabited dwellings have an electricity and clean water supply for daily use and facilitate daily work.	Lembaga Zakat Negeri Kedah (2020), DOSM (2020).
13	Educational and health facilities	Residential areas are equipped with education and health facilities.	Lembaga Zakat Negeri Kedah (2020), DOSM (2020).
14	Garbage Collection Facilities	Residential areas are equipped with garbage management facilities such as garbage collection and disposal to maintain cleanliness to provide comfort.	Lembaga Zakat Negeri Kedah (2020), DOSM (2020).
15	Household appliances and facilities	Household appliances that can facilitate and speed up daily work and provide comfort and satisfaction to individuals and households.	Lembaga Zakat Negeri Kedah (2020), DOSM (2020).
16	Number of children living together	Number of children or the number of family members who have blood relations and live together in the same house.	Yusof et. al. (2019), Mohamed et. al. (2019), DOSM (2019), Rasool & Amran (2017), Ali et. al. (2016), Idris & Selvaratnam (2012), Rasool et. al. (2011).
17	Number of Dependents	Number of children who are still young or age 18 years old and below, studying, not working and supported by both parents.	Yusof et. al. (2019), Mohamed et. al. (2019), DOSM (2019), Rasool & Amran (2017), Ali et. al. (2016), Idris & Selvaratnam (2012), Rasool et. al. (2011).
18	Food	Food with digestible ingredients and contain all the nutrients needed for body.	Yusof et. al. (2019), Ali et. al. (2016), DOSM (2011), Rasool & Amran (2017), Rasool et. al. (2012), Rasool et. al. (2011).
19	Utility Bill	All types of bills such as electricity bills and water bills that used at home for daily affairs.	DOSM (2011).
20	Gas and fuel	All types of gas and fuels used for daily activities.	DOSM (2019).
21	Home appliances and maintenance	Home appliances and equipment used to perform daily activities and repair the damage that provides comfort to individuals and member of the households.	DOSM (2019), Lembaga Zakat Negeri Kedah (2020).
22	Debt	Debts that have to be borne in daily life to continue living either to individuals, banks and others.	Yusof et. al. (2019), Mohamed et. al. (2019), DOSM (2011).
23	Alcoholic drinks	All types of alcoholic beverages consumed by individuals or member of the households.	DOSM (2019).
24	Residential ownership status	Houses inhabited by individuals or member of the households are the property of the individual himself, rent or inherit.	DOSM (2019).

25	residential age	The durability or integrity of a dwelling to be inhabited by individuals or households.	Yusof et. al. (2019), Rasool & Amran (2017), Ali et. al. (2016), Rasool et. al. (2012), Rasool et. al. (2011), DOSM (2011).
26	Residential location	The locations of individuals and households settled either urban or rural.	DOSM (2019).
27	Residential condition	The condition of the houses of individuals or households whether in good condition, safe from danger and comfortable to live in.	Lembaga Zakat Negeri Kedah (2020).
28	Accommodation – electrical, water, communication tools	Accommodation or residence with basic facilities such as water, electricity and communication tools used to carry out daily activities that provide comfort and satisfaction.	DOSM (2019), Lembaga Zakat Negeri Kedah (2020).
29	Smoking status	Individual is a hardcore smoker and has the willingness to spend their income for his whims or vice versa.	Lembaga Zakat Negeri Kedah (2020).
30	Type of Property – House, Garden, Hamlets, Rice field	Type of property owned by individuals.	Lembaga Zakat Negeri Kedah (2020).
31	Health and Medication	The level of heath of an individual that obliges them to receive treatment and medication continuously and limit the individual to work.	Lembaga Zakat Negeri Kedah (2020).
32	Education costs	The education costs such as tuition fees, books and other that must be borne by individual or the head of the family to continue their studies.	Lembaga Zakat Negeri Kedah (2020).
33	Clothing and Footwear	Clothing that covers the entire limbs as outlined by religion.	Lembaga Zakat Negeri Kedah (2020).
34	Transportation	All costs paid by individual and members of the household for transportation such as fare and other related.	Lembaga Zakat Negeri Kedah (2020).

Notably, the emphasis of this study is on discerning suitable criteria that can effectively represent the eligibility of Zakat recipients while adhering to the Islamic laws of Had Kifayah and Maqasid Shariah. By narrowing the focus to zakat applicants and refining the criteria selection process, this study seeks to contribute valuable insights to the literature, addressing a specific aspect that has received comparatively less attention in prior studies.

Next, this study is focusing on the application of the index since it is widely used in the previous study related to poverty.

2.3 The Application of Index

Index method has been used widely in poverty-related research area. Besides poverty, index is also used in other research area, such as economy, environment, technology (Ticehurst et. al., 2022; Desa et. al., 2015), decision making (Cakranegara et. al., 2022; Kasim et. al., 2011) and management (Goker, 2020; Sullivan & Meigh, 2003). The process of developing the Index involves three main activities, which are data standardization, weight computation, and Index development. The issues studied in index development are on the methods of assigning the criteria weight and developing the Index. In general, two types of weighting methods can be used to assign the weight for the criteria, called as the objective and subjective weighting methods. However, the selection of weighting methods is depending on the availability of data and the attribute of the criteria. Further discussion of index development process is discussed in the next section.

2.3.1 Data Standardization Approaches

In this study, the standardization of the data is referred to Jemain (2004) and Zulkifli et. al. (2014). There are three (3) approaches suggested to compute the data

standardization which are optimum values, maximum and minimum values and normal values. The formulation of the three (3) approaches are tabulated in Table 2.6.

Table 2.6

The formulation of data standardization using Jemain (2004) approaches.

Approach	Formulae
Optimum value	**Minimum value:** $$Z_{ij} = \frac{min_j(x_{ij})}{x_{ij}}$$ where z_{ij} – standardize criteria x_{ij} – data value $min_j(x_{ij})$ – the minimum value of j criteria **Maximum value:** $$z_{ij} = \frac{x_{ij}}{max_j(x_{ij})}$$ where z_{ij} – standardize criteria x_{ij} – data value $max_j(x_{ij})$ – the maximum value of j criteria
Minimum and maximum value	$$z_{ij} = \frac{x_{ij} - min_j(x_{ij})}{max_j(x_{ij}) - min_j(x_{ij})}$$ where z_{ij} – standardize criteria x_{ij} – data value $max_j(x_{ij})$ – the maximum value of j criteria $min_j(x_{ij})$ – the minimum value of j criteria
Normal value	$$z_{ij} = \frac{x_{ij} - \bar{x}_i}{s_i},$$ Average: $$\bar{x}_i = \frac{1}{n}\sum_j x_{ij}$$ Variance: $$s_i^2 = \frac{1}{n-1}\sum_j (x_{ij} - \bar{x}_i)^2$$ where z_{ij} – standardize criteria $\bar{x}_i$ – mean of *i*-th criteria s_i – standard deviation of *i*-th criteria x_{ij} – data value s_i^2 – variance of *i*-th criteria n – number of the criteria

The standardization of the data is necessary to remove discrepancies from variations in measurement units and data scales (Jalil & Sharif, 2017) in order to standardize the values associated with each individual criterion. This process ensures that various criteria, which initially might have had different units or scales of measurement can be aligned to a uniform and consistent foundation for direct comparison. This practice helps in avoiding decision making that is based on inaccurate or incomplete information (Simplilearn, 2022).

The standardized data serves as the basis for attributing weights to the criteria. The weight of the criteria is used to determine the degree of importance of the criteria (Kasim et. al., 2012; Hasnan et. al., 2019) in identifying the priority and eligibility of zakat recipients. In this study, secondary data is standardized to determine the objective weight of the criteria. The discussion of the method used to determine the weighted value of criteria is covered in the next section.

2.3.2 Methods Used to Assign the Criteria Weight

The decision to select the best weighting method is depending on the availability of data and criteria attributes. However, in multi-criteria decision making (MCDM) problems, the results of the decision-making process can be significantly influenced by the weights factors (Odu, 2019). The difficulty of choosing an appropriate weighting technique to solve the MCDM problem has prompted some researchers to evaluate the weight of criteria by assuming that all decision-makers are aware of the significancy of criteria (Zardari et al., 2015; Sukma & Dachyar, 2021). In order to produce an accurate model result, it is necessary to consider the validity of the criterion weights obtained by using various weighting techniques where the MCDM techniques helps in improving the decisions quality (Arvind & Janpriy, 2018).

In general, weights can be categorized into two namely objective weights and subjective weights. The objective weighting methods derive the criteria weights from the data obtained for each criterion through the mathematical models where it is useful when there is no decision-maker (Koksalmis & kabak, 2019; Aldian & Taylor, 2005). Meanwhile, subjective weights are based on the knowledge and experience of the experts in the relevant field (Odu, 2019). This method is based on the expert's individual subjective opinion. In-depth exploration of the method used to determine the criteria weights is discussed in the next section.

2.3.2.1 Objective Weight

In multi-criteria decision making, the criteria weighted approach assigns relative importance to each criterion or attribute in the decision matrix and uses this information to evaluate and compare the alternatives based on the performance on each criterion. The weighted scores of the criteria are used to determine the overall scores and rank the alternatives according to overall performance.

The objective weighting method is a mathematical approach to determining the weights of criteria or attributes. In this method, the weights are calculated from the data and do not rely on subjective opinions or preferences of the decision-makers.

In the domain of Multi-Criteria Decision Making (MCDM), several methods are employed to objectively assign weightings to criteria. These methods include entropy, CRITIC (Criteria Importance Through Intercriteria), standard deviation, PCA (Principal Component Analysis), and TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) as presented in Table 2.7.

Table 2.7

The classification of objective weighting methods.

Methods	Research Area	Authors
Entropy	Hospital admission.	Desa et al. (2015)
	Architectural conservation.	Del & Tabrizi (2020)
	Performance evaluation.	Sarkar & Sarkar (2014)
	Estimating the income distribution.	Kittaneh (2019)
	Measuring road transport sustainability.	Wang et. al. (2022)
	Determining weights of criteria in MCDM.	Mukhametzyanov (2021)
CRITIC	Logistic performance.	Ulutas & Karakoy (2019)
	Modified integrated weighting MCDM model for ranking agrarian dataset.	Deepa et. al. (2019)
	Weight determination in MCDM.	Mukhametzyanov (2021)
Standard Deviation	Weight determination in MCDM.	Mukhametzyanov (2021)
	Modified integrated weighting MCDM model for ranking agrarian dataset.	Deepa et. al. (2019)
PCA	Development in transition economies.	Shaukat & Zhu (2021)
	Factors influencing zakat compliance.	Abdullah & Sapiei (2018)
	Zakat compliance.	Ayob (2002)
	Zakat compliance intention.	Bidin et. al. (2016)
TOPSIS	Dam site suitable mapping.	Chodha et. al. (2022)
	Selection of industrial arc welding robot.	Pathan et. al. (2022)
	Supply chain.	Magableh & Mistarihi (2022)

The entropy method is highly regarded for its objectivity and precision, reducing subjectivity by relying on mathematical calculations rather than human judgment (Baydas & Pamucar, 2022). It excels at quantifying information uncertainty and effectively addresses complex multi-criteria problems (Evans & Guo, 2021; Zardari et. al., 2015; Li et. al., 2011). One of its strengths lies in its ability to assess unbiased relative variable weights and resolve implicit conflicts among variables in intricate decision scenarios. The method evaluates the information quantity associated with each indicator, particularly excelling when dealing with high-dimensional datasets. In such cases, it calculates weights based on the information content of each indicator, assigning greater importance to indicators with higher information content or entropy

values. This ensures that more uncertain or diverse indicators are given greater significance in the decision-making process (Zhu et al., 2020; Hussain & Mandal, 2016; Xu, 2023).

In contrast, the CRITIC method offers another objective approach for determining indicator weights. It is considered more scientific and less prone to subjective biases when compared to the entropy method. CRITIC assesses weights based on the comparison intensity and conflict between evaluation indicators. Unlike the entropy method, which focuses on information quantity, CRITIC evaluates weights based on how indicators compare in terms of their influence on decision-making. This method considers the similarity or dissimilarity of indicators and assigns greater importance to criteria exhibiting higher levels of variability (Adali & Isik, 2017; Zizovic et. al., 2020; Xu, 2023; Baydas & Pamucar, 2022; Yuan & Liu, 2022).

Meanwhile, standard deviation method serves as a valuable tool for objectively determining criteria or attribute weights within MCDM. This method begins by assessing the variability or spread of data associated with each criterion. It accomplishes this by quantifying how much the values of a specific criterion deviate from their mean or average. A higher standard deviation value indicates greater dispersion and variability in the data, signaling increased uncertainty related to that specific criterion (Mustafa et. al., 2022; Eisa & Fattouh, 2023). To make criteria comparable for weight determination, the standard deviation method standardizes criterion data by calculating the standard deviation of each criterion's values across the set of alternatives or options under consideration. This reliance on empirical data enhances transparency and contributes to more informed decision-making processes (Baydas & Pamucar, 2022).

Another widely used method in MCDM is PCA, which offers a unique approach, particularly valuable in complex decision scenarios. PCA aims to reduce data dimensionality while preserving essential information. It transforms original criteria or attributes into uncorrelated variables called principal components, which are then weighted based on the proportion of variance they explain. This data-driven and objective approach simplifies candidate evaluations, particularly in scenarios characterized by interrelated or redundant criteria (Pradhan et. al., 2016; Dugger et. al., 2022; Robert & Wang, 2022).

Lastly, the method considered to determine the objective weight is TOPSIS method. The criteria used is normalized to ensure that it has the same scale. It constructs a decision matrix, calculating the distance of each alternative from both the ideal and anti-ideal solutions. TOPSIS systematically organizes complex decision problems into a structured framework, enhancing transparency and reducing subjective biases. However, it treats criteria as independent entities and does not explicitly consider potential interactions among them, which may lead to suboptimal decisions in real-world scenarios (Anwar et al., 2023; Mustafa et al., 2022).

In conclusion, when it comes to determining the objective weight of criteria in MCDM, various methods like entropy, CRITIC, standard deviation, PCA, and TOPSIS are used to enhance decision accuracy and remove subjectivity. However, entropy method consistently stands out as the most dependable approach for determining objective criteria weights in MCDM. The combination of objectivity, precision, and adaptability minimizes subjectivity, aligns with mathematical rigor, and excels in handling complex decision scenarios, making it the preferred choice for transparent and reliable multi-criteria decision-making.

2.3.2.2 Subjective Weight

The subjective weight is based on the decision-makers' opinions, preferences or judgements. This method can be used to indicate the decision-maker's opinion accurately because this method relies on the judgements or preferences of the decision-makers.

Table 2.8

The classification of subjective weighting methods.

Methods	Research Area	Authors
BWM	The social sustainability of supply chain.	Ahmadi et. al. (2017)
	Firm's R&D performance.	Salimi & Rezaei (2018)
	Location selection.	Kheybari et. al. (2019)
	Relative importance of logistic performance.	Rezaei et. al. (2018)
AHP	Prioritizing zakat core principles criteria.	Rusydiana & Firmansyah (2017)
	Mustahik's criteria evaluation.	Sukmana et. al. (2018)
	Optime the zakat collection.	Amalia (2018)
	Islamic economic and finance.	Abduh (2013)
	River health assessment.	Shan et. al. (2020)
	Material selection.	Yang et. al. (2018)
	Modified integrated weighting MCDM model for ranking agrarian dataset.	Deepa et. al. (2019)
Delphi	Strategies to enhance zakat role.	Alfiani & Akbar (2020)
	Designing shariah governance standard.	Hakim et. al. (2019)
	Islamic micro financial institution.	Ascarya & Sakti (2022)
ROC	Construction of a composite hospital admission index.	Desa et. al. (2015)
	A decision model for Asian Higher Education Institutes.	Prabadevi et.al. (2023)
Point Allocation	A distance based MCDM approach.	Shih (2022)
	Weighting method for MCDM technique.	Odu (2019)
	Weighting methods and their effects on multi-criteria decision-making model outcomes.	Yusop et. al. (2015)
	Construction of air pollution index with the inclusion of aggregated weight of the pollutants.	Fauzi et. al. (2022)
SMART	Weighting methods and their effects on multi-criteria decision-making model outcomes.	Yusop et. al. (2015)
	Weighting method for MCDM technique.	Odu (2019)
	A fuzzy simultaneous evaluation of criteria and alternatives (F-SECA) for sustainable E-waste scenario management.	Keshavarz-Ghorabaee (2022)
Ranking method	Weighting methods and their effects on multi-criteria decision-making model outcomes.	Yusop et. al. (2015)
	Weighting method for MCDM technique.	Odu (2019)

The methods considered to determine the subjective weight are Best-Worst Method (BWM), Analytical Hierarchy Process (AHP), Rank Order Centroid (ROC), Point Allocation, Delphi, Simple Multi-Attribute Ranking Technique, and Ranking method. of criteria is shown in Table 2.8.

BWM is a recently developed and highly effective technique in the realm of Multi-Criteria Decision Making (MCDM) used for determining the subjective weights of criteria. This method streamlines the weight assignment process by engaging experts or decision-makers in a structured pairwise comparison exercise. In this exercise, they are asked to identify and rank the "best" and "worst" criteria for each alternative under consideration. What sets BWM apart is its unique approach that demands relatively less information while ensuring higher consistency in comparisons. The resulting BWM scores reflect a remarkable degree of numerical consistency among the responses provided by respondents. This is due to the method's ability to generate various weighting schemes, each oriented towards specific dimensions within the decision problem. BWM has found extensive applications across diverse fields, including technological innovation, logistics, art gallery assessment, and supply chain management, demonstrating its versatility and reliability in different contexts (Rezaei, 2015; Rezaei, 2016; Van De Kaa et al., 2019; Rezaei et al., 2018; Tseng et al., 2022). Its straightforward nature, coupled with its ability to handle complex and interconnected criteria, makes BWM a standout choice for determining subjective weights in MCDM scenarios.

A widely recognized and extensively used method for determining subjective weights in decision-making is the AHP. This method is particularly favoured for its ability to handle multiple criteria and provide a structured approach to decision-making. It

places a strong emphasis on the judgment of decision-makers while also considering the consistency of their comparisons among alternatives. AHP's objective is to quantify the relative priorities of a given set of options on a ratio scale, aligning with the decision-maker's perspective. This method resonates well with decision-makers as it allows them to draw upon their information and experience when making judgments. Furthermore, AHP accommodates group decision-making, enabling the systematic consideration of both quantitative and qualitative factors in problem-solving (Jagtap & Karande, 2023; Al-Harbi, 2001). However, it's important to note that while AHP offers a systematic framework for decision structuring, it is not without its challenges. In situations involving a substantial number of criteria, AHP can be perceived as complex. The process of ensuring consistent judgments in pairwise comparisons and calculating the consistency ratio can introduce subjectivity and demand significant effort from decision-makers, as evidenced by several studies (Rusydiana & Firmansyah, 2017; Sukmana et al., 2018; Amalia, 2018; Abduh, 2013; Shan et al., 2020; Yang et al., 2018; Deepa et al., 2019).

In addition to AHP, the Delphi method is recognized for its ability to facilitate group communication, information sharing, and collective judgment. It proves especially beneficial when tackling complex and challenging topics, enhancing the efficiency of the decision-making process. Delphi techniques are applied worldwide to explore a wide range of subjects by gathering expert-based opinions on epistemic questions. The methodology operates on the premise that assembling a diverse group of experts with varying perspectives yields more accurate outcomes than relying solely on the judgment of a single expert, even if that individual possesses extensive knowledge in their field. Researchers who opt for the Delphi method typically acknowledge the importance of structuring the group communication process to achieve their

objectives. A significant advantage of this method is that it allows for a constructive exchange of ideas with experts while maintaining their anonymity, contributing to the construct validity of their responses (Niederberger & Spranger, 2020; Okoli & Pawlowski, 2004; Turoff et al., 2002). However, it's worth noting that the applicability of the Delphi method may not be universal across all decision contexts, and it can be a time-consuming process (Alfiani & Akbar, 2020; Hakim et. al., 2019; Ascarya & Sakti, 2022).

Meanwhile, the ROC method is well-suited for straightforward ranking tasks where the primary objective is to rank alternatives based on their overall performance. ROC excels in providing a simple and intuitive approach for decision-makers, especially in scenarios where determining precise criteria weights is challenging or when decision-makers aim to minimize subjectivity in weight assignments. This method normalizes criteria, ensuring a level playing field, and ranks alternatives based on their individual criterion performances. However, ROC has inherent limitations, particularly in situations where understanding the relative importance of criteria is crucial, as evident in studies like Desa et al. (2015) and Prabadevi et al. (2023). In essence, ROC is a valuable tool for straightforward ranking tasks but may fall short in complex decision contexts requiring more nuanced insights into criteria importance and interactions. Thus, its applicability should be carefully considered based on the specific demands of the decision problem at hand.

Next, the point allocation method is a direct approach that enables decision-makers to articulate their preferences by assigning points to different criteria. It offers a relatively simple and accessible way to engage stakeholders in the decision-making process. This method can be particularly effective when decision-makers possess a comprehensive

understanding of the decision problem and can easily express their preferences using a points-based or percentage-based system. It stands out for its transparency and simplicity in involving stakeholders. However, it's essential to recognize its limitations. The method heavily relies on the subjective judgments of decision-makers, which may not always capture the true significance of criteria accurately. Additionally, it may not adequately address complex interactions or interdependencies among criteria, making it more suitable for relatively straightforward decision scenarios where such complexities are not a primary concern. In summary, while the Point Allocation Method has its strengths, it is best applied when decision-makers are well-versed in the decision context and when a simplified approach to preference expression is preferred, especially in situations where intricate criteria interactions are not a dominant factor (Shih, 2022; Odu, 2016; Yusop et. al., 2015; Fauzi et. al., 2022).

SMART serves as an effective and user-friendly approach for ranking alternatives in multi-criteria decision-making scenarios. It stands out as a valuable tool when decision-makers seek a simplified method that doesn't necessitate assigning precise numerical weights to criteria or engaging in intricate calculations. SMART's strength lies in its ability to offer a quick and intuitive means of ranking alternatives based on their overall performance, making it applicable across diverse domains such as project selection, supplier evaluation, and product prioritization. One of its primary advantages is its user-friendliness, allowing decision-makers to focus on ranking alternatives without grappling with complex mathematical procedures. However, it's important to acknowledge that SMART has limitations. It doesn't provide explicit criteria weights, which some other MCDM methods do, nor does it offer detailed insights into the trade-offs between criteria. Therefore, SMART is best suited for relatively simple decision problems where the primary goal is to establish a ranking

among alternatives based on overall performance. For more complex scenarios that require a deeper understanding of criteria interrelationships and precise criteria weights, other MCDM methods may be more appropriate (yusop et. al., 2015; Odu 2019).

Lastly, the ranking method is a straightforward approach that provides a clear order of preference among alternatives, making it relatively easy to implement. In this method, decision-makers or experts assign explicit ranks to criteria based on their perceived importance, and the final weights are determined based on these rankings. However, it's important to recognize that the ranking method is highly dependent on subjective judgments and may produce results influenced by the expertise and biases of those involved in the ranking process. This subjectivity can introduce an element of uncertainty into the weight determination process. Additionally, the method may not account for complex interactions or dependencies among criteria, which can limit its applicability in decision scenarios where such considerations are significant (Yusop et. al., 2015; Odu, 2019).

In conclusion, among the various methods used to determine the subjective weight of criteria in Multi-Criteria Decision Making (MCDM), the Best Worst Method (BWM) stands out as the most effective and preferred choice. BWM's simplicity and effectiveness make it a standout method in this context. It engages decision-makers or experts in a structured pairwise comparison exercise, where they identify and rank the "best" and "worst" criteria for each alternative. What sets BWM apart is its ability to achieve high consistency in comparisons while demanding relatively less information. This consistency is reflected in the remarkable degree of numerical consistency among the responses provided by respondents. Furthermore, BWM's versatility is evident in

its successful applications across various fields, from technological innovation to logistics and supply chain management. The strengths of BWM, including its straightforward nature and capacity to handle complex and interconnected criteria, position it as the best method for determining subjective weights in MCDM scenarios. Its ability to strike a balance between ease of use and robustness makes it highly valuable, particularly in decision contexts where criteria interdependence exists. While other methods like AHP, Delphi, ROC, point allocation, SMART, and the ranking method each offer their own merits, BWM's simplicity, transparency, and consistency in capturing decision-makers' preferences make it the most reliable and practical choice. Therefore, when faced with the task of determining subjective weights for criteria in multi-criteria decision-making, BWM emerges as the method of choice for achieving accurate and dependable results.

2.3.2.3 Aggregated Weight

Aggregated weight is a process of combining the local weights of different alternatives to obtain a final weight which represents the overall importance of each alternative in a decision-making process (He et. al., 2016; Calvo et. al., 2004). The weight aggregation allows the simple numerical measures of performance for an analysis and straightforward comparison (Al-Atesh et. al., 2021; Ramanathan, 2006; Chowdhury & Squire, 2006). The combination of criteria in decision making can vary depending on the specific situation and the type of problem being addressed (Vinogradova et. al., 2018). It is important to carefully consider the nature of the problem and information available before selecting a method for combining the criteria weights. By considering both objective and subjective attributes, the decision maker can gain a more comprehensive understanding that leads to more reliable and reasonable evaluations. It is expected that the final decision is aligned with the decision maker's priorities and

values, thus resulting in a satisfactory outcome (Pena et. al., 2020; Gao et. al, 2017). The method that can be used to calculate the aggregated weight is as follows:

Table 2.9

The classification of aggregated weight methods.

Methods	Research Area	Authors
Weighted Product Method	An efficient k-means algorithm for the cluster head selection based on SAW and WPM.	Khandelwat and Jain (2018).
	Data aggregation in constructing composite indicators: A perspective of information loss.	Zhou et. al. (2010).
	Construction of a composite hospital admission index using the aggregated weights of criteria.	Desa et. al. (2015).
Simple Additive Weighting Method (SAW)	Human development report.	United Nation (2001).
	Weighting methods in the construction of area deprivation indices.	Fam et. al. (2018).
Weighted Aggregated Sum Product Assessment (WASPAS)	Analisis Metode WASPAS dalam pemilihan pimpinan Perusahaan.	Anwar et. al. (2023).
	An application of WASPAS method in risk qualitative analysis: a case study of a road construction project in Iran.	Badalpur & Nurbakshsh (2021).
Weight Aggregation Operator	A novel performance evaluation technique based integrated weighting approach: a case study in the field of sport management.	Kucukonder (2021).
Weighted Arithmetic Average	Development of car theft crime index in Peninsular Malaysia.	Zulkifli et. al. (2014).

Aggregated weight, in the context of Multi-Criteria Decision-Making (MCDM), is a composite measure that reflects the overall importance or significance of a particular criterion within a decision-making process that involves multiple criteria. When faced with complex decisions that require consideration of various factors, each criterion is assigned a weight to indicate its relative priority or contribution to the decision outcome.

In evaluating the methods for aggregating the weight of criteria to develop an index, it is crucial to consider their respective advantages and disadvantages. The Weighted Product Method, although providing a comprehensive view by multiplying standardized values with their weights, can be disadvantageous due to its susceptibility to the skewing influence of a single criterion with a high weight (Khandelwat and Jain, 2018; Zhou et. al., 2010). The Simple Additive Weighting Method (SAW) strikes a balance by summing the products of standardized values and weights, offering transparency and ease of interpretation. SAW's advantages lie in its simplicity and practicality, allowing for a straightforward understanding of how criteria contribute to the overall index (Fam et. al.,2018). Conversely, WASPAS and Weight Aggregation Operator introduce complexity, potentially hindering the method's applicability and interpretability (Anwar et. al., 2023; Badalpur & Nurbakshsh, 2021). The Weighted Arithmetic Average assumes equal importance across criteria, limiting its effectiveness in capturing the varying degrees of significance (Kucukonder, 2021; Zulkifli et. al., 2014).

In conclusion, the Simple Additive Weighting Method emerges as the preferred choice due to its pragmatic balance between simplicity and effectiveness, making it a suitable and accessible approach for aggregating the weight of criteria to develop an index. These methods take into account the preferences, judgments, and priorities of decision-makers to derive the aggregated weight for each criterion, considering its impact on the overall decision result. Next, the discussion is proceeds to the approaches used to develop the index.

2.3.3 Approaches Used to Develop the Index

There are commonly approaches used in solving the multi-criteria issues in the index model. The widely used approaches in developing the index are composite index, multi-dimension index and multi-staged index. These approaches are widely used in many research areas as listed in Table 2.10.

Table 2.10

Index approaches used in previous MCDM studies.

Approaches	Application	Authors
Composite Index	Hospital admission	Desa et al. (2015).
	Poverty (Food insecurity)	De Muro et. al. (2009).
	Energy performance	Mohsin et. al. (2019).
	Food security	Caccavale & Giuffrida (2020).
	Decision making	Kasim et. al. (2011).
	Production (Wave energy)	Ghosh et. al. (2016).
	Poverty (Water management)	Sullivan & Meigh (2003).
	Performance selection	Petkovic et.al. (2017).
	Economy	Garcia-Bernabeu et. al. (2020).
Multi-Stage Weighted Index	Poverty	Susilawati et. al. (2019).
	Poverty	Novianti (2018).
Multi-dimension Index	Poverty (EPF retirees)	Solaymani et. al. (2019).
	Poverty	Alkire et. al. (2020).
	Energy poverty	Sokolowski et. al. (2020).
	Poverty	Alkire & Santos (2014).
	Poverty, health and nutrition	Antony & Laxmaiah (2008).

The composite index approach involves combining multiple criteria into single numerical value which serves as an overall score or rating for each alternative. composite index can be developed using several methods such as Analytical Hierarchy Process (AHP) and Data Envelopment Analysis (DEA) (Yzeiri & Baki, 2019). Next, the multi-dimension index approach considers multiple criteria and creates separate scores or ratings for each criterion. Then, the scores are combined to form a final ranking. Meanwhile, the multi-staged index approach involves assigning weights to the criteria in multiple stages. The method oftenly used are AHP or Technique for Order Preference by Similarity to Ideal Solution (TOPSIS).

Each approach has its own strengths and weaknesses that make it different from other approaches. However, those approaches can be used as an example to develop an index involving the Multi-Criteria Decision-Making issue. In the next section, the researcher of this study discusses data standardization approaches used to standardize the data format.

2.3.4 Best Worst Method (BWM)

The Best Worst Method (BWM) is one of the Multi-Criteria Decision Making (MCDM) techniques. For a decision-making process that applied the BWM, the weights derived for the criteria, or the alternatives are based on pairwise comparisons, which are done differently from the other pairwise comparison techniques (e.g., AHP). This technique is chosen to compute the subjective weight because it is capable to mitigate the issue of inconsistencies that occurred in pairwise comparison matrices, which a common problem that occurs in the AHP technique (Rezaei, 2020; Rezaei, 2015).

In a decision-making process, the n criteria and a pairwise comparison is executed on the criteria. The evaluation of the pairwise comparison can be done using a linguistic scale coded with 1 to 9, ranging from equal importance to one criterion affirmatively dominant towards the other criteria. Rezaei (2015) also suggested other scales like 0.1 to 1.0 or 1 to 100, reflecting the degree of importance between the two criteria. The pairwise comparison values can be constructed as a Matrix:

$$A = \begin{bmatrix} a_{11} & \cdots & a_{1j} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots & \vdots & \vdots \\ a_{i1} & \vdots & a_{ij} & \vdots & a_{in} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ a_{m1} & \cdots & a_{mj} & \cdots & a_{mn} \end{bmatrix} \qquad (2.1)$$

where a_{ij} presents the relative preference or importance degree of criterion i to criterion j. For examples, if $a_{ij} = 1$, it shows that criterion i and criterion j is equally important, while if $a_{ij} = 9$, criterion i is extremely important than criterion j. To make the Matrix A as a reciprocal matrix, the values of $a_{ii} = 1$ and $a_{ij} = {}^{1}/_{a_{ji}}$ for all criterion i and criterion j. The completed Matrix A can be obtained by doing pairwise comparisons $n\,(n-1)/2$ and it is accepted to be perfectly consistent if:

$$a_{ik} \times a_{kj} = a_{ij}, \forall\, i.j \qquad (2.2)$$

The pairwise comparison in the BWM method is conducted by comparing the best preference criteria and the worst preference criteria with all the other criteria. The illustration of the BWM pairwise comparison can be presented in Figure 2.1.

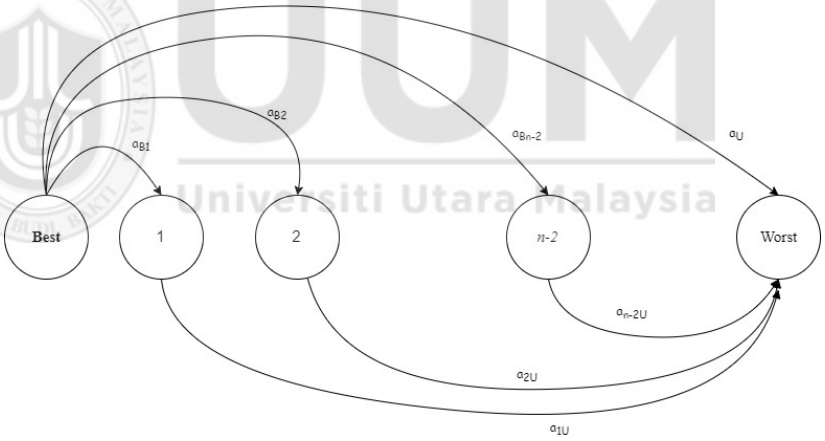


Figure 2.1. The BWM pairwise comparison process

The advantages of the BWM methods are that the integral grades are closer to human perception, and it makes the process of the evaluation easier. Next, the consistency of the pairwise comparisons can be maintained since this method eliminates the redundant comparisons. Indirectly, this method can produce more reliable results compared to other methods (Mi et. al., 2019). The relative weight assigned to each type of information depends on the specific context and the decision that needs to be

made. By considering both types of information, a more comprehensive and informed decision can be made. Thus, the aggregation process is carried out to determine the actual weight of the criteria. Further explanation of the weight aggregation is given in Section 2.3.6.

2.3.5 Weight Aggregation

The next section elaborates on the development of an index in this study, which is expected to yield a more comprehensive and objective evaluation of the criteria, resulting in greater accuracy.

2.3.6 Development of Index

Generally, index method is used to summarize the multi-dimensional issues. It can also eliminate the single domain outcomes' conflicts and produce comprehensive measurements. However, there are also disadvantages to the index method. If this method is poorly designed, it led to the misleading of decision making. There is a situation where the indicators should be examined individually in order to ensure that the index scores are meaningful (Pratama, 2023; Deng et. al., 2022; Afandi et. al., 2019; Foa & Tanner, 2012; Jemain, 2004; Sindelar & Jofre-Bonet, 2004).

Index development refers to the creation of numerical scores or indices that represent the strength of each alternative with respect to a specific set of criteria. The indices help to make the decision-making process more transparent and objectives. Besides, it also reduces the subjectivity associated with decision making. The choice of the specific statistical approach is depending on the nature of the decision problem and the characteristics of the criteria used in the decision-making process. Index method is a widely used tool for dealing with multicriteria issues in various fields (Jemain, 2004;

Patel et. al., 2020) including zakat. This method can be used for verifying, comparing and measuring the variables, factors, elements or dimensions involved in a study.

In zakat field, index method has been used to study the performance of zakat institution (Hilmiyah et. al., 2018; Noor et. al., 2015), efficiency of zakat institution (Nuraini, 2021; Noor et. al., 2015), confidence level on zakat management (Owoyemi, 2020; Salleh & Ahamad, 2011), comparison of the government spending with different group of zakat recipient (Riyadi et. al., 2021; Abdullah et. al., 2012), effect of zakat distribution in reducing poverty among asnaf (Ayuniyyah et. al., 2022; Ramli & Ibrahim, 2010), quality and customer satisfaction towards zakat institution (Tamizi et. al., 2021; Wahab et. al., 2016). In many situations, decision-makers encounter the need to consider multiple criteria which makes the decision-making process becomes more complex and challenging. To address these challenges in multi-criteria decision making, several methods have been developed. These multi-criteria decision-making methods (MCDM) assist in systematically evaluating alternatives criteria, taking into account both quantitative and qualitative factors. It also ultimately proves a clear and informed decision.

The commonly used MCDM methods include the analytic hierarchy process (AHP), the technique for order preference by similarity to ideal solution (TOPSIS) and simple additive weighting (SAW) method. Each of these methods has its own strength and weakness. However, the choice of method depends on the specific requirements of the decision-making problem and the available information. In this context, the most suitable method to employ would be the Simple Additive Weighting (SAW) or the weighted linear combination method, considering the decision-making problem and the available information. This method is based on the weighted average and is used

to evaluate alternatives from multiple attributes. Through this method, the alternatives are ranked to select the best option (Zayat et. al., 2023; Afshari et. al., 2010). The advantages of the SAW method include its simplicity, straightforwardness and the ability to be used in different cases (Nurmalini & Rahim, 2017; Li & Hu, 2021). The data or information used is standardized to ensure that the evaluation of alternatives more reliable and consistent.

In the context of developing an index for zakat recipient, SAW can be used to determine the eligibility of zakat applicants. By assigning weights to the criteria used to assess the applicants and using SAW to combine the weights, it is possible to rank the applicants based on the relative importance or priority to determine their eligibility. This can help to ensure that zakat resources are distributed in an effective and efficient manner.

Next, the relationship and significancy of the criteria is verified through model development. The development of the model is further explained in Section 2.4.

2.4 The Application of Geographically Weighted Regression (GWR)

Geographically Weighted Regression (GWR) or known as the local estimates model is one of the spatial regression analysis methods. This method also can be used as an exploratory tool in visualising the relationship between the changes of variables in the research area. According to Zakaria and Rahman (2017) and Saifudin et. al. (2019), GWR is a modification of Ordinary Least Square Regression (OLS) that is used in solving the unstable parameter and unreliable significant testing problem. Besides, GWR can be used in measuring the spatial relationship among the variables in a certain location of the research area. This method produces an accurate model coefficients estimation.

Regression modelling, including methods like GWR, is a statistical approach used to understand the relationship between dependent and independent variables. It aims to develop mathematical models for making predictions based on independent variables. The choice of an appropriate regression model depends on the nature of the data and the relationship between the variables. GWR is particularly useful when there are spatial variations or heterogeneity in the variables being studied, as traditional regression models may produce biased or misleading results when these variations are not considered. By estimating models separately for each location, GWR captures local variations and relationships between variables that may be overlooked by traditional regression models.

GWR offers significant advantages in spatial analysis by considering local variations and relationships between variables. It enables a localized approach, capturing spatial heterogeneity and providing a more accurate understanding of factors influencing phenomena across different locations. GWR enhances precision and reliability in modelling, leading to improved insights for planning, decision-making, and management strategies. By accounting for spatial variations, GWR enhances the accuracy and comprehensiveness of analyses, allowing for targeted interventions and informing strategies specific to each location. GWR provides valuable insights into spatial patterns and localized influences, facilitating informed decision-making and more effective interventions (Saputra & Radam, 2022; Zhang et. al., 2021; Shabrina et. al., 2021; Ren et. al., 2022; Evans et. al., 2020).

In the previous study, GWR method is used to solve many issues involving locations. A study conducted by Saputra and Radam (2022), GWR is utilized to develop an accessibility model for Bus Rapid Transit (BRT) stop locations in Banjarmasin,

Indonesia. The research aims to understand the factors influencing the selection of BRT stop locations by considering localized effects and spatial variations. GWR enables a more accurate and nuanced understanding of the factors that impact the accessibility of BRT stops in specific areas, facilitating effective planning and decision-making for BRT infrastructure development and urban transportation systems in Banjarmasin.

In the context of crime studies, GWR allows researchers to identify how variables such as poverty, unemployment, education levels, and demographics influence crime rates in different neighbourhoods or regions. By considering the spatial variations in these relationships, GWR helps uncover the specific factors that have a varying impact on crime in different areas (Grubesic et. al., 2012; Ye & Wu, 2011; Huang & Leung, 2002). This information is crucial for policymakers and law enforcement agencies to develop targeted crime prevention strategies tailored to specific locations.

GWR also plays a role in studying how different variables such as socio-economic status, healthcare access, environmental factors, and demographic characteristics influence mortality rates in different geographic areas. By analysing the spatially varying relationships between these variables and mortality, GWR helps identify areas with higher mortality rates and the specific factors contributing to them. This information can guide policymakers in implementing targeted interventions and allocating resources to improve health outcomes in specific regions (Cupido et. al., 2021; Holt & Lo, 2008).

Besides the research are mentioned above, GWR method also used in various fields such as transportation, tourism, agriculture, crime, public health and epidemiology, economic and seismology as summarised in Table 2.8.

Table 2.11

The application of GWR in previous studies.

Research area	Application of GWR	Author
Transportation	Developing an accessibility model for Bus Rapid Transit (BRT) stop locations in Banjarmasin, Indonesia.	Saputra & Radam (2022)
Tourism	Analysing the dynamics of short-term rental platforms in the urban tourism context.	Shabrina et. al. (2021)
Agriculture	Analysing regional industrialization in Jiangsu province.	Huang & Leung (2002)
Crime	Spatial modelling of crime.	Nezami & Khoramshahi (2016).
Public Health and Epidemiology	Modelling the vulnerability of dengue haemorrhagic fever disease.	Chamidah et. al. (2014)
Economics	Analysing the impact of fiscal decentralization on economic performance.	Permai et. al. (2021).
Seismology	Modelling earthquake magnitude in the southern part of Java Island.	Mardianto et. al. (2022)

However, in the context of zakat, the application of GWR has been relatively limited compared to other regression methods such as Logistic Regression (Khamis & Kamarudin, 2022), Binary Logistic Regression (Cokrohadisumarto, 2020), and Ordinary Least Square Regression (Sulaeman, 2021; Hamidi et al., 2020). Nonetheless, GWR holds significant potential in providing a more nuanced understanding of the relationship between zakat criteria and the demographic, economic, and geographical conditions of different districts. By considering spatial variations and localized effects, GWR enables decision-makers to gain insights into how the criteria influencing zakat distribution vary across different regions. This can ultimately facilitate more effective resource allocation and identification of individuals or communities in need of zakat assistance. Further research and application of GWR in the context of zakat can contribute to more robust and tailored approaches in addressing socio-economic inequalities and improving the impact of zakat programs.

2.5 Summary of Chapter

This chapter provides a brief review of the literature related to the topic of zakat, highlighting the lack of research on the criteria used to identify eligible zakat recipients. The main objective of this study is to fill the gap by examining the geographical profile of potential recipients and the Islamic law of Had Kifayah and Maqasid Shariah to determine the main criteria for the selection process of eligible recipients. To highlight the research gap, this chapter also discusses gaps, inconsistencies, or limitations in previous research on zakat. It identifies areas, particularly in zakat distribution, that require further research. The chapter reviews several approaches used by previous research to identify the most suitable method that can be used in this study. This process helps to identify limitations of the review, potential biases or methodological issues, and any suggestions that can be adopted in the research. Overall, this literature review chapter provides a comprehensive understanding of the current state of research on zakat and highlights the research gap that the present study aims to fill.

CHAPTER 3

METHODOLOGY

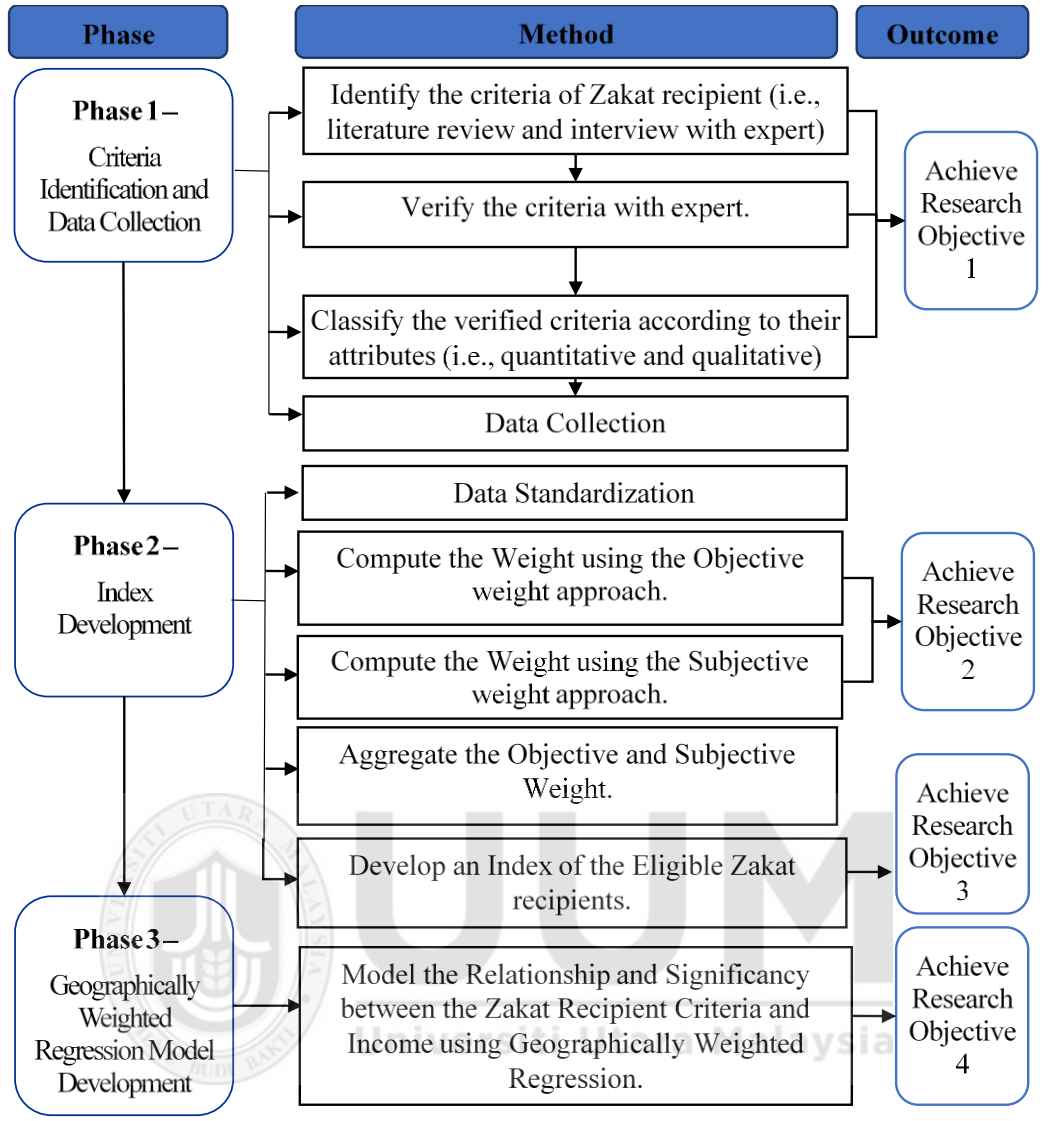
3.1 Introduction

This chapter describes a complete review of the methodology used in this study applying a combination of the qualitative and quantitative approaches. Nonetheless, the research outcome mainly contributed from the quantitative analysis, while the qualitative analysis is used to enrich the early stage of the research process. The descriptive design approach was applied to identify the criteria of a Zakat recipient from the literature and expert. Then, the experimental design approach is used to develop the Index and regression models.

This chapter has been constructed into seven sections. The first section introducing the chapter discuss followed by the framework of the research method in Section 3.2. Then, the research process is described in four consecutive sections, covering the phase of identifying the criteria, collecting the data and the sampling technique (Section 3.3). Next, the development of the Index covers the phase of standardizing the data, weighting the criteria and developing the Index (Section 3.4) and finally constructing the Geographically Weighted Regression model (Section 3.5). The summary of the chapter is presented in Section 3.6.

3.2 Research Framework

Three phases have been outlined in this study to achieve the four research objectives of this study, as depicted in Figure 3.1. A detailed description of each phases' activities is explained from Section 3.3 until Section 3.5.



The main objective of this research is to develop an index and modelling the criteria of the zakat recipient in Kedah. Meanwhile the specific objective of this research is as follow:

i. To identify the criteria for zakat recipient eligibility in Kedah.
ii. To determine the weightage of the criteria identified in (i).
iii. To develop an index of zakat eligibility in Kedah.
iv. To determine the significance of criteria by district in Kedah.

Figure 3.1. Flow of Research Process

3.3 Phase 1: Criteria Identification and Data Collection

This phase focuses on the process of identifying the criteria of Zakat recipients in Kedah to achieve Research Objective 1. Three main activities are executed in this phase, covering the processes of reviewing the literature and interviewing the

experts, verifying the criteria with experts and classifying the criteria according to their attributes.

3.3.1 Criteria Identification

In the first activity, relevant literature and articles about Zakat, including Had Kifayah, poverty and Maqasid Shariah topics, were reviewed and analysed using the systematic literature review. This activity had been completed and reported in Chapter 2. The summary of Chapter 2 is illustrated in Figure 3.2, covering the criteria' features or domains relevant to the Had Kifayah and Maqasid Shariah variables that used as primary reference to identify the criteria.

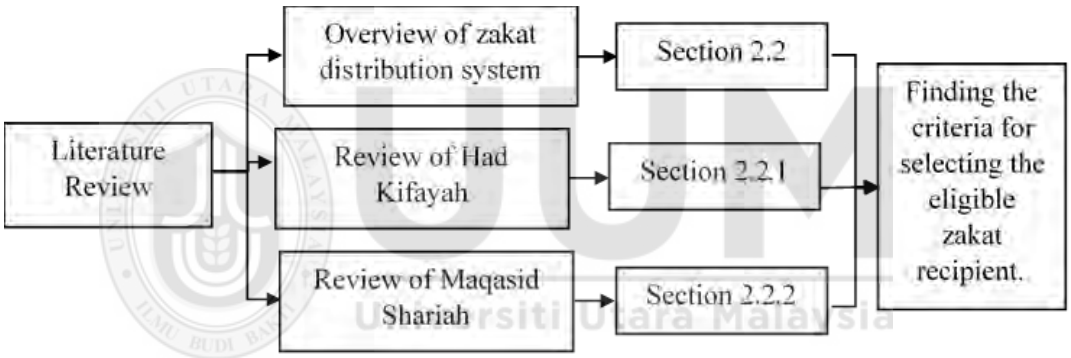


Figure 3.2. Information collection from literature materials

Then, the researcher of this thesis interviewed the experts to gather practical information about the zakat recipient's criteria from their point of view. The interview also serves to seek more information that perhaps have not been covered in the literature. The Lembaga Zakat Negeri Kedah (LZNK) personnel have been chosen as the experts because this study only focused on the zakat Kedah distribution operation. They hold Shariah law qualifications and have working experience of more than two years in the LZNK or hold a top-level management position in their departments. The experts' knowledge and expertise contribute to

this study where they shared their real-time problems and solutions related to zakat distribution and zakat recipient's criteria.

A set of semi-open-ended questions was prepared for the interview, which contains the questions of general knowledge about the LZNK, zakat distribution operation, and criteria that the LZNK has used in selecting the eligible zakat applicants. Examples of the questions that have been asked in the interview were:

i. How does LZNK's staff identify the zakat recipient?
ii. What are the main criteria used by LZNK to identify the eligible zakat applicant?

This interview provided information on the current implementation of zakat distribution in the LZNK, including the method used to distribute zakat and additional information on the criteria used to identify the recipient (i.e., Maqasid Shariah variables). The interview sessions were recorded using a voice recorder, and the transcript of the interview was analysed using the thematic analysis technique. The thematic analysis is a process to find common patterns across the data set, involving making sense of the interview respondents' individual stories (Krippendorff, 2018).

Besides the data from literature related to Zakat and interview, the researcher also referred to the reports released by the Department of Statistic Malaysia (DOSM). The reports contain the information related to the household expenditure by main group and districts in Kedah. This report summarises the item with highest percentage and the subgroup of item of household expenditure.

Then, all the Zakat recipient's criteria discovered from the literature, the thematic analysis, and the DOSM report were mapped and combined according to their

similarity. Table 3.1 shows the criteria relevant to measure the eligibility of zakat recipients as follows.

Table 3.1

The main criteria of zakat recipient.

Criteria	Reference
Total income of the head of a family	Lembaga Zakat Negeri Kedah (2020), DOSM (2019)
Gross household income	
Source of income	
Employment status	Yusof et. al. (2019), Rasool & Amran (2017), Rasool et. al. (2012), Idris & Selvaratnam (2012), Rasool et. al. (2011), DOSM (2019)
Suffering from chronic disease	Lembaga Zakat Negeri Kedah (2020), Yusof et. al. (2019), Ali et. al. (2016), DOSM (2011), Rasool & Amran (2017), Rasool et. al. (2012), Rasool et. al. (2011)
Old	
Disable	
Age	Lembaga Zakat Negeri Kedah (2020), DOSM (2019), Ali et. al. (2016), Possumah (2016), Ali et. al. (2014), Rasool et. al. (2012)
Gender	
Marriage Status	DOSM (2019), Yusof et. al. (2019), Rasool & Amran (2017), Rasool et. al. (2012), Idris & Selvaratnam (2012), Rasool et. al. (2011)
Communication tools	Lembaga Zakat Negeri Kedah (2020), DOSM (2020)
Electrical and water supplier	
Educational and health facilities	
Garbage collection facilities	
Household appliances and facilities	
Number of children living together	Yusof et. al. (2019), Mohamed et. al. (2019), DOSM (2019), Rasool & Amran (2017), Ali et. al. (2016), Idris & Selvaratnam (2012), Rasool et. al. (2011)
Number of dependents	
Food	Yusof et. al. (2019), Ali et. al. (2016), DOSM (2011), Rasool & Amran (2017), Rasool et. al. (2012), Rasool et. al. (2011).
Transport	
Utility bill	DOSM (2011); DOSM (2019)
Gas and fuel	DOSM (2019)
Home appliances and maintenance	DOSM (2019), Lembaga Zakat Negeri Kedah (2020)
Clothing and footwear	Lembaga Zakat Negeri Kedah (2020)
Education	
Health and medication	
Debt	Yusof et. al. (2019), Mohamed et. al. (2019), DOSM (2011)
Type of property (House, garden, hamlets, rice field)	Lembaga Zakat Negeri Kedah (2020)
Home appliances (TV, Radio, Astro, Refrigerator, washing machine, air conditioning, internet, computer)	
Smoking status	
Alcoholic drinks	DOSM (2019)
Homeownership status (Inheritance. Rent, private)	
Age of the house	Yusof et. al. (2019), Rasool & Amran (2017), Ali et. al. (2016), Rasool et. al. (2012), Rasool et. al. (2011), DOSM (2011)
Residential location	DOSM (2019)
home condition	Lembaga Zakat Negeri Kedah (2020)

The criteria identified have been collected from different sources such as reports from Lembaga Zakat Negeri Kedah (LZNK), DOSM and various scholarly articles. It can be used collectively to evaluate the eligibility of the individuals applying for zakat assistance. These criteria provide a comprehensive view of financial, health, demographic, and lifestyle aspects that contribute to determine the zakat recipient.

The description of how the relevant criteria were selected for further analysis is explained in the next section.

3.3.2 Criteria Verification

In the second activity of Phase 1, the expert review was used to verify the criteria gathered. The verification process was conducted via a structured questionnaire, and the structure of the questionnaire was divided into two sections, as follows.

i. Section A: Demographic information.
ii. Section B: The most important criteria that should be used in identifying the Zakat recipient.

The Likert scale is used to measure the agreement degree among the experts, ranging from '1' to '7', where '1' refers to 'the least important' and '7' refers to 'the most important'. The scale is designed to represent a continuum of agreement or importance of the criteria. During the evaluation process, experts assign numerical values to each criterion based on their perceived level of significance. This allows for a quantifiable measure of the experts' opinions, providing a structured way to capture and analyse their assessments.

The experts are selected using purposive sampling, those of the LZNK staff responsible for handling the Zakat distribution activities. During the survey, the researcher guided the experts in answering the questionnaire.

The outcome of the questionnaires' analysis is presented in Table 4.1 in Chapter 4 where the relevant criteria were determined based on the highest score attainment. The outcome is then used for data collection purposes where further explanation of data collection is discussed in Section 3.3.3.

3.3.3 Data Collection

The last activity of Phase 1 is collecting the data as an input for index and regression model developments in Phases 2 and 3, which covers both secondary and primary data.

Secondary data were collected from LZNK database, which contains information on zakat recipient and criteria that determine their qualification as recipients recorded from 2018 to 2020. The data collected included all the criteria related to recipient chosen as shown in Table 3.1.

Meanwhile, the primary data is used purposely to serve as the input data for computing the criteria weight in the index development process, specifically for the subjective weighting method. The primary data characterise the evaluation of the experts for each criterion. The evaluation process has been conducted under the interview setting using the structured questionnaire where the experts were guided on how to evaluate the criteria using a linguistic scale.

Verifying the level of importance of the criteria can only be done by the experts who have knowledge or experience in zakat distribution. In this study, the experts who can verify the criteria of zakat recipient are LZNK personnel and Amil assistant. Hence, purposive sampling was used as a sampling method to select the experts, a total of 51 LZNK personnel and Amil. There are ten LZNK personnel from the main office and 41 Amil assistants from various district offices. The details of the experts are tabulated in Table 3.2 and Table 3.3.

Table 3.2

List of Amil involved in the survey.

Gender	Position	Years of Working Experience
Male	Amil assistant	4
Male	Amil assistant	3
Male	Bilal Masjid / Amil assistant	5
Male	Amil assistant	1
Male	Amil assistant	1
Male	Amil assistant	3
Male	Amil assistant	15
Male	Teacher / Amil assistant	26
Male	Amil assistant	4
Male	Amil assistant	3
Male	Amil assistant	2
Male	Amil assistant	3
Male	Teacher / Amil assistant	27
Male	Amil assistant	2
Male	Amil assistant	4
Male	Siak / Amil assistant	4
Male	Amil assistant	4
Male	Farmers / Amil assistant	15
Male	Amil assistant	4
Male	Amil assistant	4
Male	Amil assistant	2
Male	Imam / Amil assistant	8
Male	Amil assistant	2
Male	Amil assistant	4
Male	Amil assistant	3
Male	Deputy head of Maahad Tahfiz / Amil assistant	6
Male	Amil assistant	3
Male	Amil assistant	3
Male	Amil assistant	3
Male	Imam / Amil assistant	3
Male	Bilal Masjid / Amil assistant	24
Male	Amil assistant	4
Male	Amil assistant	2
Male	Amil assistant	3
Male	Amil assistant	4
Male	Amil assistant	10
Male	Amil assistant	5
Male	Siak / Amil assistant	6
Male	Siak / Amil assistant	21
Male	Doctor / Amil assistant	4
Male	Imam / Amil assistant	6

Table 3.3

List of LZNK Personnel.

Gender	Age	Years of Working Experience	Position	Working Experience with LZNK
Man	38	5	Employees	Asnaf development division
Woman	35	6	Director	Research center
Woman	45	6	Employees	Research center
Man	50	7	Employees	Asnaf distribution and development department
Man	52	7	Employees	Asnaf distribution and development department
Man	49	7	Employees	Asnaf distribution and development department
Man	40	5	Employees	Division of education and innovation
Man	35	5	Employees	Division of education and innovation
Man	34	5	Employees	Division of education and innovation
Man	47	6	Employees	Division of education and innovation

The data collected based on the expert opinion is used to calculate the subjective weight of the criteria. Then, the weight of criteria is aggregated for development of ZaKRi index. The explanation of index development is further discussed in Section 3.4.

3.4 Phase 2: Index Development

The process of developing the Index involves three main activities, which are data standardization, weight computation, and Index development.

Firstly, the data collected in Phase 1 is standardised. The formulation to standardise the data in this study referred to Jemain (2004) and Amran and Zulkifli (2020). There are three approaches to compute the standardised data. The three approaches are the maximum or minimum values, optimum value and normalised data value. This study applied the optimum values approach in standardising the data. The formulations of the optimum value approaches are shown in Section 3.4.1.

Secondly, the weights were assigned to the criteria determined in Phase 1, which is done to meet Research Objective 2. The criteria weights were computed according to the criteria type explained in Section 3.3.2. The criteria that require the expert review is obtained using the subjective weighting method and the criteria that do not require the expert deliberation is obtained using the objective weighting method. In this study, the entropy technique is deployed in the objective weighting method. Meanwhile, the Best Worst Method (BWM) is applied under the subjective weighting method.

Finally, in the last process of developing the index, the objective weight and subjective weight of the criteria is integrated. The purpose of integrating the weight of the criteria is to overcome the disadvantage of the individual approaches. Then, the integrated weight is used to construct the ZaKRi Index, which is done to achieve Research Objective 3.

Further explanation and the mathematical formulae of the Entropy, BWM, aggregated weight and index development are explained in Sections 3.4.2, 3.4.3, and 3.4.4, respectively.

3.4.1 Data Standardization

The optimum value formula is referred to Jemain (2004) and Amran and Zulkifli (2020). The formula is as follows:

$$z_{ij} = \frac{x_{ij} - min_j(x_{ij})}{max_j(x_{ij}) - min_j(x_{ij})} \qquad (3.1)$$

where z_{ij} – standardized observation

x_{ij} – criteria

$max_j(x_{ij})$ – the maximum value of the j criteria

$min_j(x_{ij})$ – the minimum value of the j criteria

Example of data standardization calculation for Langkawi district is as follows:

$$z_{Number\ of\ household} = \frac{0.3500 - 0.0000}{1.0000 - 0.0000} = 0.3500$$

After standardising the data into common data format and consistent manner, the weight of the criteria is determined. The explanation of the objective weight and subjective weight are explained in Section 3.4.2 and Section 3.4.3.

3.4.2 Entropy Method

The procedure of the entropy method used in this study refers to Popovic (2017), Lotfi and Fallahnejad (2010), Kasim and Jemain (2020) and Jemain (2004).

Step 1: Construct the decision matrix, which is denoted by X. The elements of Matrix X represent i-th zakat applicant against j-th criterion of the zakat applicant eligibility. The values of x_{ij} represent the element of Matrix X where $i = 1,2,\cdots,m$ and $j = 1,2,\cdots,n$. The decision matrix can be expressed as below:

$$X = \begin{bmatrix} x_{11} & \cdots & x_{1j} & \cdots & x_{1n} \\ \vdots & \ddots & \vdots & \vdots & \vdots \\ x_{i1} & \vdots & x_{ij} & \vdots & x_{in} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ x_{m1} & \cdots & x_{mj} & \cdots & x_{mn} \end{bmatrix} \qquad (3.2)$$

Step 2: Convert the element in Matrix x_{ij} into the standardised observation, which is denoted by z_{ij}. In this study, the optimum value approach was adopted to compute the z_{ij} score for i-th zakat applicant against the j-th criterion of the zakat applicant eligibility. The formulation of the optimum value approach is expressed as below:

$$z_{ij} = \frac{x_{ij} - min_j(x_{ij})}{max_j(x_{ij}) - min_j(x_{ij})} \qquad (3.3)$$

Step 3: Compute the entropy value for the *j*-th criterion, which is denoted by e_j. The value of e_j is:

$$e_j = \left(-k \sum_{i=1}^{m} \frac{z_{ij}}{z_j} \ln\left(\frac{z_{ij}}{z_j}\right)\right) \qquad (3.4)$$

where $k = \frac{1}{\ln(m)}$ and z_j is the total score for criterion of zakat applicant eligibility for the *j*-th criterion where the formular as follows:

$$z_j = \sum_{i=1}^{m} z_{ij} \text{ where } j = 1,2,\cdots,n \qquad (3.5)$$

Step 4: Compute the weights of the *j*-th criteria, which is denoted by w_j^{obj}. The formula of w_j^{obj} is:

$$w_j^{obj} = \frac{1-e_j}{\sum_{i=1}^{n} 1-e_j} \qquad (3.6)$$

Example of the calculation for Langkawi district is as follows:

Step 1: The decision matrix $X = x_{ij}$ that represent *i*-th zakat applicant against *j*-th criterion of the zakat applicant eligibility where $i = 1,2,\ldots,610$ and $j = 1,2,\ldots,17$. The matrix is as follows:

$$X = \begin{bmatrix} x_{11} & x_{12} & x_{13} & \cdots & x_{1(17)} \\ x_{21} & x_{22} & x_{23} & \cdots & x_{2(17)} \\ x_{31} & x_{32} & x_{33} & \cdots & x_{3(17)} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ x_{610(1)} & x_{610(2)} & x_{610(3)} & \cdots & x_{610(17)} \end{bmatrix}$$

$$= \begin{bmatrix} 0.0000 & 0.3500 & 0.3158 & \ldots & 0.0000 \\ 0.0000 & 0.2500 & 0.2105 & \ldots & 0.4668 \\ 0.4286 & 0.3500 & 0.3158 & \ldots & 0.5369 \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ 0.0000 & 0.0000 & 0.0000 & \ldots & 0.0000 \end{bmatrix}$$

Step 2: The standardised observation for applicant A6 against criterion number of households is as follows:

$$z_{Number\ of\ household} = \frac{0.3500 - 0.0000}{1.0000 - 0.0000} = 0.3500$$

Step 3: The entropy, e_j value and the total score for criterion, z_j for number of households is:

$$e_{Number\ of\ households} = \left(-\frac{1}{\ln(25794)} \sum_{i=1}^{25794} \frac{z_{i(2)}}{z_2} \ln\left(\frac{z_{i(2)}}{z_2}\right)\right)$$

$$= (-0.0984)(-87863.3279) = 8650.2478$$

$$z_{Number\ of\ households} = 0.1682$$

Step 4: The weights of number of households is:

$$w^{obj}_{Number\ of\ households} = \frac{1 - 8650.2478}{-253998.5169} = 0.0341$$

3.4.3 Best Worst Method (BWM)

The procedure refers to Liang et. al. (2020), Rezaei et. al. (2018) and Rezaei (2015).

Step 1: Determine the criteria, involving the criteria category that will use the subjective weighting method. Let c_n refer to the criteria where $n = 1,2,\cdots,N$ and $C = (c_1, c_2, \cdots, c_N)$ for the set of the criteria.

Step 2: Determine the Best and Worst criteria among the criteria formed in Step 1. Examples that can illustrate these two criteria are the best and least important or important or desired. Let c_B and c_U implies the Best criterion and Worst criterion, correspondingly. In the event of choosing more than one criterion c_B and c_U, they can be chosen randomly. However, it is recommended to choose only one criterion for both criteria c_B and c_U.

Step 3: Execute pairwise comparisons between criterion c_B and the other criteria in set C. In this activity, rate the preference of criterion c_B over all criteria in set C using a scale between 1 and 9 as presented in Table 3.4.

Table 3.4

Scale of the Intensity of the Criteria Importance Between Criteria c_B and the other criteria in set C

Intensity of Preference	Definition	Explanation
1	Equal importance	Two criteria influence equally to each other
3	Moderate importance	Criterion c_B is slightly favored over another
5	Strong importance	Criterion c_B is strongly favored over another
7	Very Strong importance	Criterion c_B is strongly favored over another and its domination is demonstrated in practice.
9	Absolute importance	Criterion c_B is positively important on the highest possible order.
2,4,6,8	Intermediate values	Applied to represent a compromise between the preference intensity listed above.

The preference degree of criterion c_B represented by a_{Bj} and the sets of criterions c_B is labeled the Best of Others. Let BO represents the Best of Others and the vector of BO can be shown as:

$$BO = (a_{B1}, a_{B2}, \cdots\ a_{Bj} \cdots a_{Bn}) \qquad (3.7)$$

where $a_{Bj} \geq 1$ and $j = 1,2,\cdots,n,\ j \neq B$.

Step 4: Execute pairwise comparisons between the criterion c_U and the other criteria in set C. Employ the same activity as in Step 3, except for the pairwise comparisons are executed with criterion c_U. The preference degree of criterion c_U represented by a_{jU} and the sets of criterions c_B preference degree is labeled as the Worst of Others. Let BU represents the Worst of Others and the vector of BU can be established as:

$$BU = \left(a_{1U}, a_{2U}, \cdots\ a_{jU} \cdots a_{nU}\right)^T \qquad (3.8)$$

where $a_{ju} \geq 1$ and $j = 1,2,\cdots,n,\ j \neq B$ or U. In this step, $n-2$ pairwise comparison have to be done because a_{nU} is known in vector BU and it is a$n \times 1$ vector.

Step 5: Derive the optimal weights. Let w_j^{sub} refer to the optimal weight value where $j = 1,2,\cdots,n$ and the set of w_j^{sub} is represented by W^{sub}, which can be formed as $W^{sub} = \left(w_1^{sub}, w_2^{sub}, \cdots, w_n^{sub}\right)$. The optimal weight w_j^{sub} is the one where, for each pair of ${}^{w_B}/_{w_j}$ and ${}^{w_j}/_{w_U}$, they denote ${}^{w_B}/_{w_j} = a_{Bj}$ and ${}^{w_j}/_{w_U} = a_{jU}$. The condition of this optimal weight has to be solved with the minimum of maximum absolute differences for all j, which shown as $\left|\frac{w_B}{w_j} - a_{Bj}\right|$ and $\left|\frac{w_j}{w_U} - a_{jU}\right|$. The computation of the condition explained before can be presented in a min-max model, anticipating the process of obtaining the non-negativity and sum condition for the weight. The min-max model following known as Model 1 and is given by:

$$\min \max_j \left\{\left|\frac{w_B}{w_j} - a_{Bj}\right|, \left|\frac{w_j}{w_U} - a_{jU}\right|\right\} \qquad (3.9)$$

$$\text{subject to } \sum_j w_j = 1$$

$$w_j \geq 0, \text{ for all } j$$

Then, convert Model 1 into Model 2 to obtain the maximum absolute difference, which is represented by ξ. Model 2 is given by:

$$min\ \xi \qquad (3.10)$$

subject to

$$\sum_{j=1}^{n} w_j = 1 \qquad (3.11)$$

where $w_j \geq 0, j = 1,2,\cdots,n$ and $\left|\frac{w_B}{w_j} - a_{Bj}\right| \leq \xi$ and $\left|\frac{w_j}{w_U} - a_{jU}\right| \leq \xi$. The solution of Model 2 produces the optimal weights $\left(w_1^{sub}, w_2^{sub}, \cdots, w_n^{sub}\right)$ and ξ. Input data in Steps 1,2 and 3 is collected as in the procedure of the primary data collection setting as explained in Section 3.3.3.

The example of the calculations for the BWM for the first decision maker is presented below:

Step 1: Since there are 17 criteria, then

$$C = (c_1, c_2, \ldots, c_{17})$$

Step 2: The Best criteria is number of household (c_B) and the Worst criteria is the level of education (c_U).

Step 3: Determining the Best of Others vector

$$BO = (7,8,6,9,1,3,2,5,2,9,7,4,7,8,5,7,5)$$

Step 4: Determining the Worst of Others vector.

$$BU = (9,9,6,8,8,3,2,2,3,9,5,5,8,5,5,1,6)^T$$

Step 5: The weight obtained by solving the following model where min ξ such that.

$$\left|\frac{w_5}{w_1} - 7\right| \leq \xi; \left|\frac{w_5}{w_2} - 8\right| \leq \xi; \left|\frac{w_5}{w_3} - 6\right| \leq \xi; \left|\frac{w_5}{w_4} - 9\right| \leq \xi;$$

$$\left|\frac{w_5}{w_6} - 3\right| \leq \xi; \left|\frac{w_5}{w_7} - 2\right| \leq \xi; \left|\frac{w_5}{w_8} - 5\right| \leq \xi; \ldots; \left|\frac{w_{17}}{w_{16}} - 6\right| \leq \xi$$

$$\sum_{i=1}^{17} w_i = 1$$

$$w_1, w_2, w_3, \ldots, w_{17} \geq 0$$

The solution of the model is $w_1 = 0.0600, w_2 = 0.0360, w_3 = 0.1080, \dots, w_{17} = 0.0360$ and $\xi = 0.0480$.

Then the objective weight and subjective weight of the criteria is aggregated to develop and index for the criteria of zakat recipient. Further explanation of weight aggregation is discussed in the next section.

3.4.4 Aggregated Weight

The aggregated weight is a combination of weight that is based on expert opinion and data information. The formula used to aggregate the weight referred to Desa et. al. (2015) and Fauzi et. al. (2022) as shown below.

$$w_j = \frac{w_j^{sub}.w_j^{obj}}{\sum_{j=1}^{n} w_j^{sub}.w_j^{obj}}, \quad j = 1,2,\dots,n,\ 0 \le \sum_{j=1}^{n} w_j \le 1 \qquad (3.12)$$

The example of aggregation weight calculation for per capita income is as follows:

$$w_{Per\ capita\ income} = \frac{(0.0992)(0.0614)}{0.0585} = 0.1040$$

Then, the aggregated weight is used to develop the ZaKRi index where the explanation of the index development is given in Section 3.4.5.

3.4.5 Index Development

The procedure to develop an Index is referred to Desa et. al. (2015), Fauzi et. al. (2022) and Afshari et. al. (2010). The values of the aggregated weight obtained from Section 3.4.4 is used to compute the score of the zakat recipient index for each zakat applicants, *i* which is denoted by $ZaKRI_i$ is shown as below:

$$ZaKRi = \sum_{j=1}^{n} w_j z_{ij}, \quad i = 1, 2, \dots, m \text{ and } j = 1, 2, \dots, n \qquad (3.13)$$

where w_j - the values of aggregated weight

z_{ij} - the standardized observation of the actual data

The example of the calculation for the ZaKRi index for applicant A6 in Langkawi districts is as follows:

$$\begin{aligned} ZaKRi_{A6} = \; & (1 * 0.0479) + (0 * 0.0217) + (0 * 0.0418) + (0 * 0.0431) \\ & +(1 * 0.0715) + (1 * 0.0716) + (1 * 0.1029) + (0.1000 * 0.0606) \\ & +(0 * 0.6000) + (0 * 0.0484) + (0.1195 * 0.0478) \\ & +(0.0136 * 0.0531) + (0.0386 * 0.1040) + (0.1823 * 0.0542) \\ & +(1 * 0.0588) + (0.0304 * 0.0661) + (0.2689 * 0.0465) \\ = \; & 0.4142 \end{aligned}$$

The lower index score indicates that the applicant is less qualified to receive the zakat and the higher index score indicates vice versa.

3.4.6 Summary of Index formulation

Procedures and formulations used to develop the Index described in the sections earlier are summarised as in Figure 3.3.

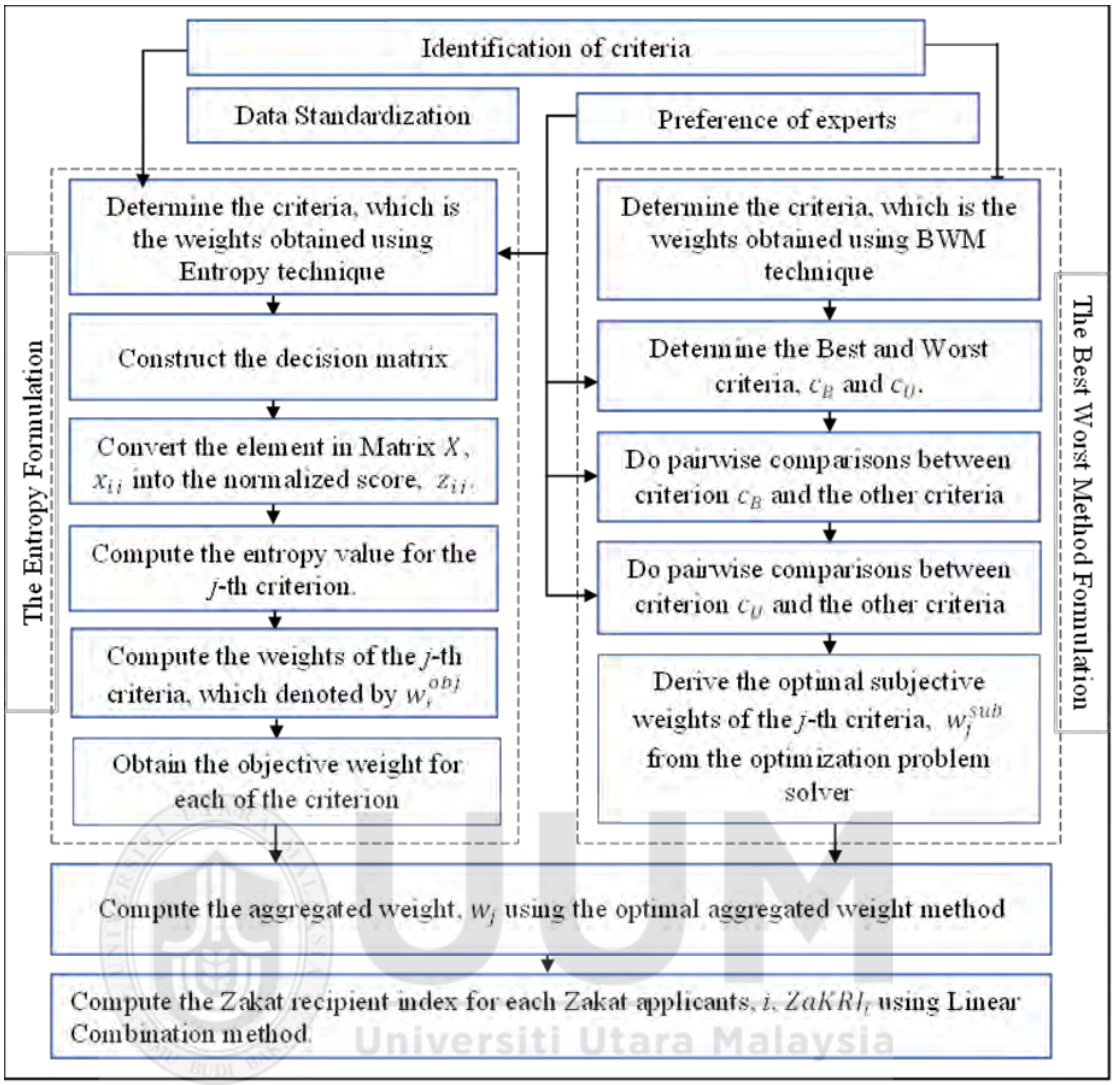


Figure 3.3. The Flowchart of Index Formulation

3.5 Phase 3: Geographically Weighted Regression (GWR) Model Development

This phase aims to construct a regression model for verifying the criteria in order to determine the relationship and significancy between the criteria ranked and the main criterion representing the Asnaf group of poor and needy. In this phase, Geographically Weighted Regression is deployed as a method. However, the process of developing the model involve the Factor analysis and multicollinearity in order to reduce the dimension of data. The discussion of Factor analysis and multicollinearity is shown in

Section 3.5.1 and Section 3.5.2. Meanwhile, the development of the model using the GWR approach is discussed in Section 3.5.3.

3.5.1 Factor Analysis

Factor analysis is used to identify the underlying pattern in a set of variables and reduce the number of variables into a smaller set of factors that capture the essential structure of data (Taherdoost et. al., 2022). In this study, factor analysis is used to group several sub-criteria into main criteria as it allows the researcher of this study to identify the related criteria. In addition, it also used to avoid the high dimension issue in developing the model.

3.5.2 Multicollinearity

Multicollinearity occurs when several variables in the regression model have strong inter-correlations. Checking for multicollinearity is crucial during model development in order to prevent inaccurate estimates of regression coefficients which result to incorrect conclusions about the relationship between predictors and outcome variables. Thus, by addressing the multicollinearity issues, the model can accurately capture the relationship between the predictors and outcome variables that lead to more reliable and valid results (Tang et. al., 2022; Van Den Bosch et. al., 2020).

The presence of multicollinearity can be detected using the Variance Inflation Factor (VIF) value. The formula to calculate the VIF is:

$$VIF = \frac{1}{1-R^2} = \frac{1}{Tolerance} \tag{3.15}$$

Where tolerance is the inverse of the VIF, the lower the tolerance, the greater the likelihood of multicollinearity.

The example of calculation to determine the VIF value for electronic tools is:

$$VIF_{Electronic\ tools} = \frac{1}{0.188} = 5.329$$

According to Young (2018), Shrestha (2020), Narmilan et.al (2022) and Ibrahim et. al. (2022), the VIF tolerance value used to detect the presence of multicollinearity is as presented in Table 3.5.

Table 3.5

The VIF acceptance value to detect the presence of multicollinearity.

Acceptance Value	Interpretation
VIF =1	There is no multicollinearity.
1 < VIF < 5	Moderate multicollinearity.
5 ≤ VIF ≤ 10	Strong indication of a problem with multicollinearity.
VIF>10	Critical levels of multicollinearity.

Based on Table 3.5, VIF score of 1 indicates that there is no multicollinearity, which means that each predictor variable is independent of all the other predictor variables in the model. Meanwhile, a VIF score between 1 and 5 indicates moderate multicollinearity, which means that there may be some correlation among the predictor variables, but it is not severe enough to cause any significant problems in the model. Followed by the VIF score between 5 and 10 indicates a strong indication of multicollinearity. This means that there is a high degree of correlation among the predictor variables, which can lead to unstable coefficient estimates and less reliable predictions. Lastly, is VIF score greater than 10. This score indicates critical levels of multicollinearity. This means that the predictor variables are highly correlated with each other, and the coefficient estimates may be unreliable. In this case, it may be necessary to remove some of the predictor variables from the model reduce the degree of correlation of the variables.

Next, the GWR model is developed to check the significancy of the criteria by districts. Further discussion of the model development is discussed in the next section.

3.5.3 Geographically Weighted Regression (GWR)

The research activity in this phase is important to meet Research Objective 4, hence demonstrates the attainment of success in achieving the aim of the research in this study. The procedure in developing the GWR model referred to Leong and Yue (2017), Zakaria and Rahman (2017), Saifudin et. al. (2019) and Ningrum et. al. (2022) is as follows:

Step 1: Write the GWR model with an independent variable as:

$$y_i = \beta_0(u_i, v_i) + \sum_{r=1}^{R} \beta_r(u_i, v_i)x_{ir} + \varepsilon_i \qquad (3.16)$$

where $i = 1, 2, \ldots, N$, $r = 1, 2, \ldots, R$, β_{ri} is the coefficients of the regression for each location i and each variable r and it will be constant for all $i = 1, 2, \ldots, N$.

Step 2: Derive the GWR estimator using the weighted regression and the weight is assigned on the observations of the distance being function from the point i. the estimator is:

$$\hat{\beta}(u_i, v_i) = [X^T W(u_i, v_i) X]^{-1} X^T W(u_i, v_i) y \qquad (3.17)$$

With $\widehat{\beta_\iota} = (\widehat{\beta_{\iota 0}}\ \widehat{\beta_{\iota 1}} \ldots \widehat{\beta_{\iota M}})^{T}$, $X = (1, x_1, \ldots, x_p)^T$, $Y = (Y_1, \ldots, Y_p)^T$ and $W(u_i, v_i)$ is diagonal matrix with represented weight W_{ij} of the form:

$$W(u_i, v_i) = \begin{pmatrix} w_{i1} & 0 & \cdots & 0 \\ 0 & w_{i2} & \cdots & 0 \\ \cdot & \cdot & & \cdot \\ \cdot & \cdot & & \cdot \\ 0 & 0 & \cdots & w_{iN} \end{pmatrix} \qquad (3.18)$$

Where $W_{ij} = \exp\left[-\frac{1}{2}(d_{ij}/h)^2\right]$, d_{ij} is the distance between district i and district j and h is the best bandwidth. The GWR result presented the variation of the criteria (R^2) between the dependent variable and independent variable. Meanwhile, the parameter estimate is used to estimate the coefficient value (β_r) and the significance value (t-value) of the criteria.

The example of the calculations for the GWR model for the 12 districts in Kedah is presented below:

Step 2: The matrix of the X criteria or independent variable:

$$X = \begin{pmatrix} 1 & 16 & 731.25 & 699.5 \\ 1 & 5 & 281.75 & 119 \\ 1 & 80 & 2283.25 & 1584.5 \\ 1 & 16.5 & 1132.25 & 226 \\ 1 & 28.5 & 1113.75 & 602.5 \\ 1 & 46 & 652.75 & 495 \\ 1 & 0.5 & 243.5 & 45 \\ 1 & 8.5 & 655 & 585.5 \\ 1 & 2.5 & 1289.25 & 40 \\ 1 & 12 & 425.75 & 379 \\ 1 & 3.5 & 926.25 & 133.5 \\ 1 & 0.5 & 496.25 & 14.5 \end{pmatrix}$$

The matrix of the Y criteria or dependent variable:

$$Y = \begin{pmatrix} 1237082.99 \\ 230692.97 \\ 4566668.28 \\ 1202879.45 \\ 1075817.79 \\ 997926.47 \\ 71806.78 \\ 966848.83 \\ 47531.66 \\ 770005.75 \\ 194853.29 \\ 17588.58 \end{pmatrix}$$

The weight of the X criteria:

$W(u_1, v_1)$

$$= \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0.0245 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0.0089 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0.0282 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0.0226 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0.0019 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0.0110 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0.315 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0.0110 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0.2796 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0.0229 \end{pmatrix}$$

The estimated value for the X criteria which are electronic tools, health status and transportation:

$$\beta = [X^T W(u_1, v_1) X]^{-1} X^T W(u_1, v_1) Y = \begin{pmatrix} \beta_0(u_1, v_1) \\ \beta_1(u_1, v_1) \\ \beta_2(u_1, v_1) \\ \beta_3(u_1, v_1) \end{pmatrix} = \begin{pmatrix} -143878.85 \\ 30273.95 \\ 110.94 \\ 1162.66 \end{pmatrix}$$

The example of model equation for Baling district:

$$y_{Baling} = \beta_0(u_1, v_1) + \sum_{r=1}^{3} \beta_r(u_1, v_1) x_{1r}$$

$$y_{Baling} = -143878.85 + 30273.95 \text{ Electronic tools} + 110.94 \text{ Health status} + 1162.66 \text{ Transportation}$$

From the computation described earlier, the spatial effect and relationships that exist in the equation are now can be measured.

3.6 Summary of Chapter

The purpose of this study is to address the challenge of determining the eligibility of individuals as Zakat recipients. Given that this process requires meticulous attention to detail and can be time-consuming, the study aims to establish criteria for

determining the priority and eligibility of individuals to receive Zakat. The prioritization and eligibility are determined through the ranking of the Zakat Kedah Recipient index (ZaKRi), with the significance of each criterion determined using weighted values. It also important to recognize that different locations may have varying demographic, geographic, and economic conditions, which implies that the spatially varying relationship among the criteria cannot be disregarded. Consequently, data collection is crucial in order to gather relevant and reliable information for the study. Two types of data are collected throughout the research are primary data and secondary data. Primary data is collected through surveys using questionnaires, with zakat personnel and Amil as the respondents. They are asked to select the Best and Worst criteria in selecting Zakat recipients, thereby helping to determine the level of importance of the criteria. The Best Worst Method (BWM) is then employed to determine the subjective weights of the criteria. On the other hand, secondary data is collected from the LZNK database, which contains information about zakat recipients, including the criteria that make them eligible to receive zakat. This information is used to determine the objective weights of the criteria using the Entropy method. This study also utilizes the Geographically Weighted Regression (GWR) method to examine the spatially varying relationship among the criteria. GWR estimates regression parameters individually at each location, enabling a better understanding of the spatial distribution of the relationship between variables. The analysis and results of the research are further discussed in the subsequent chapter.

CHAPTER 4

DATA ANALYSIS AND RESULTS

4.1 Introduction

This chapter presents the findings of the data analysis conducted to address the research objectives. The study involved three primary activities which are identifying the criteria of zakat recipients and data collection (Section 4.2), developing the zakat Kedah recipient index (ZaKRi) (Section 4.3) and modelling the criteria of zakat recipients (Section 4.4). Prior to these activities, literature review was conducted to compile a comprehensive list of criteria for zakat recipients.

4.2 Criteria Identification and Data Collection

The first phase of this study involved conducting a through literature review to identify criteria relevant to the research topic. The sources of literature review referred to are the results of several studies related to zakat, poverty, Had Kifayah, Maqasid Shariah and reports from two main institutions, namely LZNK and DOSM. The literature review aimed to compile a comprehensive list of criteria used to identify zakat recipients where the need and facilities of the poor in and needy is prioritized. The criteria align with the objective of zakat and assistance which is to alleviate poverty and enable the less fortunate to fulfill their religious obligations towards Allah SWT as noted by Haron and Rahman (2016) and Adiwijaya and Suprianto (2020). Moreover, the criteria take into account the spending patterns of the poor and needy to ensure that the zakat and assistance given are not used for the wrong purposes.

The identified criteria were further evaluated by experts to determine their significance in identifying eligible zakat recipients. The evaluation was conducted using a structured questionnaire which was provided to LZNK personnel with extensive

experience and knowledge in zakat distribution. A scale of '1' to '7' was used to evaluate the criteria where '1' referred to 'very least important' and '7' referred to 'very important' in determining the priority of the applicants to receive zakat. Ten (10) LZNK personnel participated in the evaluation process as a focus group where discussion is conducted to rate the criteria according to the given scale. The results of the evaluation are presented in Table 4.1.

Table 4.1

The focus group score for the 34 criteria in identifying the zakat recipients.

Criteria	Score
Head of the family total income	7
Gross Household Income	7
Source of Income	7
Employment Status	7
Suffering from chronic disease	7
Illness	6
Disable	7
Age	2
Gender	7
Marriage Status	7
Communication tools	6
Electrical and water supplier	7
Educational and health facilities	6
Garbage Collection Facilities	5
Household appliances and facilities	6
Number of Children Living Together	7
Number of Dependents	7
Food	6
Utility Bill	6
Gas and Fuel	6
Home Appliances and Maintenance	6
Debt	6
Alcoholic drinks	7
Residential Ownership Status	7
Residential Age	5
Residential Location	5
Accommodation – electrical, water, communication tools	6
Smoking status	6
Type of Property – House, Garden, Hamlets, Rice field	6
Health and Medication	7
Education	7
Clothing and Footwear	7
Transportation	7

The criteria predominantly rated with scores of ‘5’ to ‘7’ indicating the ‘importance’ and ‘very importance’. Age received a score of ‘2’ the lowest rating as it was deemed an insignificant criterion for identifying zakat eligibility. This is because eligibility for zakat is based on the status of being an asnaf which encompasses all levels of society regardless the age (Nurlita & Ekawaty, 2018). It is asserted that age does not have a direct or indirect impact on the consumption patterns of the asnaf. Thus, it is believed that all age groups who hold the title of asnaf are eligible to receive zakat. Furthermore, relieving the burden of the asnaf and their families is crucial for preserving their dignity in worshipping Allah SWT.

After conducting the evaluation process, the criteria were sorted into 17 main categories based on common underlying factors for the real data collection as shown in Table 4.2. The main categories of the criteria are considered as important criteria that can be used to determine the eligibility and priority of zakat applicants. The grouping of the criteria serves the purpose of standardizing the criteria between the primary and secondary data collected. This standardization is essential for ensuring that the objective and subjective weights of the criteria can be aggregated for the development of an index that accurately reflects the eligibility of zakat recipients as discussed in the second phase of this study.

Table 4.2

Categorizing the criteria collected from LZNK based on common underlying factors.

Criteria	Sub-criteria
Marital status	-
Employment status	-
Number of dependents	-
Number of households	-
Per capita income	-
Other source of income	Spouse's income
	Donations
	JKM
	Zakat
	Pension
	BRIM
	PERKESO
	Paddy field rental
	Residential rental
	KWAPM
	ASB
	Other source
Protection	-
Food and drinks	-
Clothing	-
Education	-
Medication	-
Transportation	Transportation expenses
	Car
	Motorcycle
	Bicycle
Health status	Physical condition
	Health status
	Smoking status
	Disability status
Communication tools	Handphone
	Home phone
Basic home convenience tools	Water supply
	Electrical supply
	ASTRO
	MYTV
	Internet
Electronic tools	Refrigerator
	Washing machine
	Computer
	Air conditioner
Type of property	Home ownership status
	Home condition
	Type of house
	Own house
	Heritage house
	Paddy field
	Garden
	Orchard

4.3 Assessment of Zakat Kedah Recipients Index (ZaKRi)

This section is discussing the second phase of the study which is the development of ZaKRi index. The first step in this phase is the standardization of primary data collected followed by weighting the criteria of zakat recipient. As discussed in the previous section, the development of ZaKRi index includes the objective weights and subjective weights of criteria. The objectives weights are determined without considering the preferences of the decision-maker meanwhile, the subjective weights depend entirely on the decision-maker's preferences. The weighted value is importance in determining the importance of criteria (Keshavarz-Ghorabaee et. al., 2021). Then, an index is developed for objective weight and subjective weight. The purpose of developing this index is to assess the priority of the recipient to receive zakat using the weight that based on data information and expert opinion. However, there is only one final set of weights used in developing the index. In the decision-making process, the individual weights assigned to criteria are aggregated to establish the final set of criteria used. This aggregated weight serves as a comprehensive measure, representing the overall importance of each criterion. The utilization of aggregated weights is integral to the development of the ZaKRi index, providing a nuanced and weighted evaluation that captures the significance of each criterion in the decision-making framework. Further discussion of objective weightage, subjective weightage, weight aggregation of the criteria and the development of ZaKRi index is shown in Section 4.3.1, Section 4.3.2, Section 4.3.3 and Section 4.3.4 respectively.

4.3.1 Objective Weight

The significance level of zakat recipient criteria used by LZNK is assessed based on objective weights where Entropy method is used to determine the weighted value. Next, the criteria are ranked to verify the level of importance of criteria. The larger the

weights indicate that criteria are more important in assessing the eligibility of zakat recipients.

By applying the Pareto analysis principle of 80:20 ratio, the critical criteria for determining the eligibility of zakat applicant can be identified. The rules of 80:20 highlight that 20% of the criteria are responsible for selecting 80% of the zakat recipients.

In this study, it has been found that 20% of the criteria which are deemed crucial in discerning the eligibility of zakat recipients are represented by the four (4) main criteria characterized by their highest weighted value and ranking. Among the criteria, the four main criteria stand out as the most critical criteria for evaluating an applicant's eligibility and priority in receiving zakat assistance. However, other criteria are still employed for further evaluation of zakat applicants. The objective weighted value and ranking of the criteria are presented in Table 4.3.

Table 4.3

The objective weight and ranks of zakat recipient's criteria.

Criteria	w	Rank
Electronic tools	0.0832	1
Employment status	0.0790	2
Clothing	0.0737	3
Medication	0.0728	4
Education	0.0711	5
Protection	0.0658	6
Per capita income	0.0614	7
Transportation	0.0603	8
Other source of income	0.0601	9
Communication tools	0.0575	10
Food and Drinks	0.0570	11
Type of property	0.0513	12
Basic home convenience tools	0.0509	13
Marital status	0.0468	14
Health status	0.0461	15
Number of dependents	0.0317	16
Number of households	0.0312	17
	$\sum w=1.0000$	

The objective weighted value and ranking shows that the four (4) main criteria considered as critical to determine the eligibility and priority of the applicant are electronic tools, employment status, clothing, and medication. The electronic tools involved in this study such as computers and air conditioning are owned by applicants. Computers are categorized as a tool needed in daily life for educational purposes and avoid disruption in social space especially when our country approaching the digital era (Indra, 2020). However, electronic tools are rarely owned by asnaf and zakat applicants due to the factor of ability to continue their daily life and they need to prioritize their needs more than desire. The head of a family of bigger household usually in pressure to find a secure jobs to have a good financial (Rasool et. al., 2018). Therefore, employment status is important in determining the eligibility of the asnaf to receive zakat especially when the number of households is high. Besides, the criteria also focus on the basic needs of humans as agreed by Meerangani (2019) and Adnan et. al. (2017) where fulfilling the basic needs of humans such as clothing and medication is essential to uphold the asnaf's self-esteem and spiritual beliefs. While electronic tools, employment status, clothing and medication hold higher weight and priority, the remaining criteria help to ensure that all aspects of an applicant's life and well-being are considered when distributing zakat funds. This criterion is needed when there is further evaluation of the applicant's eligibility.

By using the results of objective weighted, an index is developed assess the eligibility and priority of applicant to receive zakat. The index is developed for the 12 districts in Kedah, as zakat distribution is organized by districts. However, the detailed explanation of the index results is focused on the Langkawi districts, as this study assumes uniformity in the interpretation of the index across all districts. Additionally, Langkawi has the highest number of zakat recipients among the districts, indicating a

higher level of poverty. Therefore, the explanation of the zakat recipient index is centered on Langkawi districts. Meanwhile, the index for the remaining districts is presented in the **Appendix section**.

In Langkawi, there are 610 individuals who have submitted applications for zakat assistance. However, for the purposes of this study, the researcher has chosen to concentrate on the evaluation of the first 30 applicants who are considered to be on the top priority candidate for receiving zakat assistance. In addition, the study also assesses the last 30 applicants, who are considered to have the lowest priority in terms of eligibility for zakat assistance. The applicant with highest priority and lowest priority is assessed through the index value and ranking presented in Table 4.4 and Table 4.5.

In general, the highest index value indicates a higher priority for receiving zakat. The index values are ranked from highest to lowest so the applicant with the highest index value has the highest priority to receive the zakat assistance. The index value of the applicant is based on the criteria in Table 4.3. Among the applicants in Langkawi, applicant A6 has the highest ranking with an index value 0.3838. Therefore, this applicant A6 has high priority to receive zakat assistance. The background information of applicant A6 shows that the applicant is unemployed with total per capita income received RM157.14. In addition, this applicant also did not own any electronic tools where it indicates that this applicant is unable to acquire an item based on their desires. The total per capita income received by the applicant is considered insufficient to support the whole household since the applicant is married and needs to support their family.

Table 4.4

The index and ranking of first 30 zakat recipients based on the objective weight in Langkawi.

No	Applicant	Index	Rank
1	A6	0.3838	1
2	A9	0.3798	2
3	A11	0.3776	3
4	A1	0.3731	4
5	A8	0.3715	5
6	A15	0.3659	6
7	A30	0.3651	7
8	A16	0.3536	8
9	A18	0.3491	9
10	A32	0.3468	10
11	A4	0.3445	11
12	A21	0.3436	12
13	A45	0.3409	13
14	A49	0.3387	14
15	A57	0.3369	15
16	A29	0.3368	16
17	A62	0.3354	17
18	A35	0.3334	18
19	A3	0.3329	19
20	A58	0.3309	20
21	A56	0.3263	21
22	A19	0.3263	22
23	A12	0.3253	23
24	A41	0.3220	24
25	A77	0.3210	25
26	A28	0.3185	26
27	A44	0.3181	27
28	A43	0.3176	28
29	A90	0.3127	29
30	A51	0.3116	30

Table 4.5

The index and rank of last 30 zakat recipients based on the objective weight in Langkawi.

No	Applicant	Index	Rank
1	A582	0.2264	579
2	A583	0.2264	579
3	A584	0.2264	579
4	A595	0.2257	585
5	A596	0.2257	585
6	A597	0.2216	592
7	A598	0.2216	592
8	A599	0.2216	592
9	A600	0.2216	592
10	A601	0.2216	592
11	A602	0.2216	592
12	A603	0.2216	592
13	A604	0.2216	592
14	A605	0.2216	592
15	A606	0.2216	592
16	A607	0.2216	592
17	A608	0.2216	592
18	A453	0.2215	598
19	A146	0.2202	599
20	A26	0.2195	600
21	A454	0.2183	601
22	A141	0.2177	602
23	A74	0.2176	603
24	A411	0.2153	604
25	A371	0.1718	605
26	A568	0.1697	606
27	A416	0.1667	607
28	A456	0.1566	608
29	A610	0.1461	609
30	A609	0.1442	610

Meanwhile, the last 30 applicants in Table 4.6 shows that the applicants with lowest index value and ranking is applicant A609. It indicates that this applicant has the lowest priority to receive zakat assistance. The background information of the applicant shows that applicant did not own any electronic tools as it is considered as

the critical criteria determined in objective weight. Besides, the applicant was also unemployed and did not have any per capita income or any source of income, spending for clothing and medication. In addition, applicant A609 did not have any dependent. Thus, this applicant has the lowest rank as recipient. Even though the applicant initially met the critical criteria for eligibility as a zakat recipient, upon closer examination, it was discovered that the applicant did not fulfil certain essential requirements, such as did not have any dependents.

As conclusion, even though there are 4 main criteria listed as critical criteria to determine applicant eligibility, it is necessary to consider other criteria for closer examination. It is essential in order to prioritize those who are truly in need and unable to support themselves and their families (Ali et. al., 2019; Al-Qaradawi, 1973).

Overall, the decision in choosing the eligible recipient must be based on careful consideration of each individual's circumstances and needs. Thus, the significancy of criteria and priority of zakat recipients needs an expert opinion. The expert's opinion helps in verifying the criteria significancy that relate Islamic laws and real situation of asnaf. Therefore, subjective weight of criteria is determined to find the best criteria in identifying the recipient that based on expert's opinion. The results of subjective weight are shown in Section 4.3.2.

4.3.2 Subjective Weight

Expert opinion plays a pivotal role in the distribution of zakat, particularly in the assessment of applicants' eligibility. These experts possess the knowledge and experience needed to identify and verify the financial and social status of potential recipients. This requires a nuanced understanding of financial intricacies and social contexts, enabling a comprehensive evaluation that extends beyond mere financial

thresholds. Furthermore, their discernment is crucial in preventing misallocation, thereby preserving the integrity of the zakat fund. Serving as custodians, they ensure that zakat is directed to those genuinely in need, aligning with the core ethos of aiding the marginalized and those facing adversity. Their involvement not only guarantees the accurate disbursement of zakat but also enhances the overall effectiveness of the distribution process. Through meticulous examination of the legitimacy of recipients, these experts facilitate a more streamlined and efficient allocation of resources, maximizing the impact of each contribution.

Therefore, the expert's opinion is considered alongside other criteria, with the weighted value of each criterion determined based on the expert's opinion. These weighted values for the 17 criteria used to identify the zakat recipient are tabulated in Table 4.6.

Table 4.6

The subjective weight and rank of zakat recipient's criteria

Criteria	w	Rank
Per capita income	0.0992	1
Number of dependents	0.0772	2
Communication tools	0.0728	3
Electronic tools	0.0725	4
Basic home convenience tools	0.0676	5
Transportation	0.0641	6
Marital status	0.0599	7
Health status	0.0547	8
Type of property	0.0530	9
Employment status	0.0530	10
Other source of income	0.0528	11
Education	0.0499	12
Food and Drinks	0.0491	13
Clothing	0.0476	14
Protection	0.0472	15
Number of households	0.0406	16
Medication	0.0389	17
	$\sum w=1.0000$	

The results of the subjective weight show that the four (4) main criteria based on expert opinion differs from data information wherein a higher subjective weight value indicates a greater perceived importance of the criterion, with the first ranking

signifying the highest rank. According to expert opinion, the head of household per capita income, the number of dependents, communication tools, and electronic tools are considered important criteria for determining the eligibility of applicants. Per capita income is an important economic indicator that provides valuable insight into the economic well-being of a person. It can be used to gain better access to essential goods and services such as education, health care, accommodation and nutrition. Additionally, the number of dependents can significantly impact the overall cost of living where the higher number of dependents leads to increase of financial responsibilities for the head of household (Ali et. al., 2013; Adilla et. al., 2021). Besides, the experts also agree that the use of communication tools and electronic tools is gradually gaining significance in alignment with the country's technological development (Trucano, 2014). However, as discussed in the previous section, the asnaf group typically prioritizes needs over desires, necessitating consideration of the remaining criteria for a more in-depth evaluation of the applicant's eligibility. These criteria ensure that all aspects of an applicant's life and well-being are taken into consideration during the distribution of zakat funds.

The adjustment in the level of importance of criteria results in the indirect alteration of the priority of zakat recipients. Therefore, an index using the subjective weight of the criteria is developed to determine the priority of the applicants to receive zakat as shown in Table 4.7 and Table 4.8. As discussed in the previous section, the explanation of the zakat recipient index is centered on Langkawi districts. Meanwhile, the index for the remaining districts is presented in the **Appendix section**.

Table 4.7

The index and rank of first 30 zakat recipients based on the subjective weight in Langkawi.

No	Applicant	Index	Rank
1	A6	0.4055	1
2	A11	0.4040	2
3	A9	0.3924	3
4	A15	0.3860	4
5	A8	0.3774	5
6	A1	0.3714	6
7	A30	0.3713	7
8	A42	0.3683	8
9	A16	0.3617	9
10	A18	0.3572	10
11	A21	0.3553	11
12	A51	0.3505	12
13	A85	0.3494	13
14	A57	0.3474	14
15	A4	0.3467	15
16	A32	0.3457	16
17	A71	0.3441	17
18	A89	0.3433	18
19	A84	0.3433	19
20	A80	0.3408	20
21	A45	0.3384	21
22	A49	0.3374	22
23	A96	0.3372	23
24	A98	0.3359	25
25	A99	0.3359	25
26	A35	0.3352	26
27	A94	0.3348	27
28	A62	0.3344	28
29	A88	0.3340	29
30	A29	0.3332	30

Table 4.8

The index and rank of last 30 zakat recipients based on the subjective weight in Langkawi.

No	Applicant	Index	Rank
1	A63	0.2443	581
2	A411	0.2418	582
3	A72	0.2417	583
4	A13	0.2387	584
5	A454	0.2375	585
6	A59	0.2365	586
7	A82	0.2355	587
8	A68	0.2347	588
9	A52	0.2338	589
10	A70	0.2325	590
11	A75	0.2270	591
12	A26	0.2261	592
13	A83	0.2252	593
14	A55	0.2226	594
15	A50	0.2206	595
16	A54	0.2203	596
17	A141	0.2201	597
18	A64	0.2183	598
19	A61	0.2146	599
20	A69	0.2134	600
21	A81	0.2127	601
22	A74	0.2070	602
23	A105	0.2070	603
24	A146	0.1960	604
25	A371	0.1928	605
26	A568	0.1797	606
27	A416	0.1781	607
28	A456	0.1770	608
29	A610	0.1509	609
30	A609	0.1489	610

The index value of the applicant is developed based on the criteria presented in Table 4.6. Among the applicants in Langkawi, applicant A6 has a high priority in receiving zakat with index value 0.4055. As mentioned in the preceding section, applicant A6 per capita income is RM157.14 with a total of 6 dependents. In terms of facilities, applicant A6 does not own any such as communication tools and electronic tools as the applicant prioritizes the limited resources for basic needs.

Meanwhile, in Table 4.8, the last applicants with the lowest index value of 0.1489 is applicant A609. This signifies that applicant A609 has the lowest priority to receive zakat assistance despite not having per capita income and having two dependents living together. However, this applicant is capable of possessing facilities such as communication tools and electronic tools. Therefore, further investigation is needed where other criteria should be considered to evaluate the applicant's eligibility and priority to receive zakat assistance.

The difference between the index value derived from objective weight and subjective weight lies in the ranking or priority assigned to applicants for zakat assistance where different criteria are considered as main criteria. The weighted values assigned to the criteria significantly influence the prioritization of applicants to receive zakat. Relying solely on data information without incorporating expert opinions may lead to biased conclusions regarding the eligibility or priority of applicants. Therefore, this study aggregates expert opinion and data information with detailed information provided in the subsequent section.

4.3.3 Aggregated Weight

Overcoming the disadvantages of individual approaches helps in solving the biases in identifying the eligibility and priority of recipient to receive zakat. Therefore, this study aggregates the information gathered from the objective weight and subjective weight to provide a more nuanced understanding of the overall impact of the data on a particular analysis (Chatterjee et. al., 2018). The result of the aggregated weight is presented in Table 4.9.

Table 4.9

The aggregated weight and rank of zakat recipient's criteria.

Criteria	w	Rank
Per capita income	0.1040	1
Electronic tools	0.1029	2
Communication tools	0.0716	3
Employment status	0.0715	4
Transportation	0.0661	5
Education	0.0606	6
Clothing	0.0600	7
Basic home convenience tools	0.0588	8
Other source of income	0.0542	9
Protection	0.0531	10
Medication	0.0484	11
Marital status	0.0479	12
Food and Drinks	0.0478	13
Type of property	0.0465	14
Health status	0.0431	15
Number of dependents	0.0418	16
Number of households	0.0217	17
	$\sum w=1.0000$	

The aggregated weight result indicates that the four (4) main criteria which are per capita income, electronic tools, communication tools and employment status are considered crucial for determining the eligibility and priority of applicants. This finding is almost similar to the outcomes identified through data information and expert opinions. As discussed in the previous section, per capita income serves as an economic indicator used to provide insights into individual's financial standing, enhancing access to essential services. Next, the growing significance of communication and electronic tools is in sync with the technological advancements that facilitate individual's daily lives. Meanwhile, an individual's employment status provides insights into their financial conditions and their ability to sustain themselves and their dependents. Those who are unemployed usually may encounter challenges in meeting their basic needs to maintain a decent standard of living and often

necessitating assistance (International Labour Organization, 2020; Heckman & Kautz, 2012).

As conclusion, it underscores the significance of these criteria in addressing the multifaceted needs of individuals, enabling them to lead a comfortable life. Therefore, these criteria play a vital role in accurately identifying individuals who require assistance to enhance their economic well-being, education and sustainable livelihoods.

Next, the eligibility and priority of the applicant to receive zakat is verified by developing the zakat Kedah recipient Index (ZaKRi) using the aggregated information of the criteria. Further details of ZaKRi index are provided in Section 4.3.4.

4.3.4 Development of Zakat Kedah Recipient Index (ZaKRi)

The development of ZaKRi index is based on the aggregated weight of criteria. The result of this index with the combined information is more accurate where the decision of selecting the eligible zakat applicants that should be prioritized in receiving are made precisely. As discussed in previous sections, the assessment of the index is conducted in Langkawi district. Meanwhile, the index for remaining districts is presented in the **Appendix section**.

The difference of ZaKRi index between the districts in Kedah is the eligibility and priority of applicants to receive zakat since it is distributed by districts. The index result is presented in Table 4.10 and Table 4.11 for the first 30 applicants and the last 30 applicants where applicant with highest ranking have high priority to receive zakat.

Table 4.10

The ZaKRi index and rank of first 30 zakat recipients in Langkawi.

Applicant	Index	Rank
A6	0.4142	1
A11	0.4129	2
A9	0.4079	3
A15	0.4039	4
A8	0.4008	5
A30	0.3976	6
A1	0.3960	7
A16	0.3844	8
A18	0.3828	9
A32	0.3760	10
A21	0.3749	11
A57	0.3744	12
A45	0.3700	13
A49	0.3681	14
A4	0.3679	15
A62	0.3676	16
A29	0.3635	17
A35	0.3632	18
A58	0.3615	19
A19	0.3600	20
A56	0.3585	21
A3	0.3568	22
A77	0.3543	23
A51	0.3529	24
A12	0.3485	25
A41	0.3481	26
A90	0.3474	27
A44	0.3472	28
A28	0.3453	29
A43	0.3439	30

Table 4.11

The ZaKRi index and rank of last 30 zakat recipients in Langkawi.

Applicant	Index	Rank
A606	0.2647	578
A607	0.2647	578
A608	0.2647	578
A22	0.2627	584
A83	0.2607	585
A453	0.2594	586
A75	0.2566	587
A64	0.2555	588
A82	0.2539	589
A55	0.2532	590
A61	0.2515	591
A81	0.2501	592
A411	0.2500	593
A54	0.2494	594
A59	0.2490	595
A454	0.2487	596
A70	0.2473	597
A50	0.2463	598
A69	0.2456	599
A105	0.2434	600
A141	0.2410	601
A26	0.2347	602
A146	0.2324	603
A74	0.2210	604
A371	0.1921	605
A568	0.1903	606
A416	0.1841	607
A456	0.1759	608
A610	0.1660	609
A609	0.1638	610

The ZaKRi index shows that applicant A6 has high priority to receive zakat with index value 0.4142. The eligibility of the applicant to be prioritized in receiving zakat can be explained by the main criteria identified in Table 4.9. Applicant A6 has high priority to receive zakat because the amount of per capita income is insufficient to support the entire household. In addition, this applicant is unemployed and did not have any source of income. Experiencing low income and unemployment results in financial challenges such as inability to cover basic expenses or unexpected expenses such as medication.

Therefore, social assistance such as zakat plays a crucial role in alleviating the applicant's burden.

In comparison to applicant A606 in Table 4.11, this applicant is unemployed with per capita income of RM100. Additionally, this applicant does not own any communication or electronic tools reflecting a focus on prioritizing essential needs. However, a more in-depth investigation is required where other criteria are considered to determine the eligibility and priority of the applicant as recipient. The background information of the applicant reveals that the applicant is single and without dependent. This results in the applicant having a lower priority for zakat assistance.

Further analysis has been carried out by comparing the priority scores of all applicants for each district displayed in Figure 4.1.

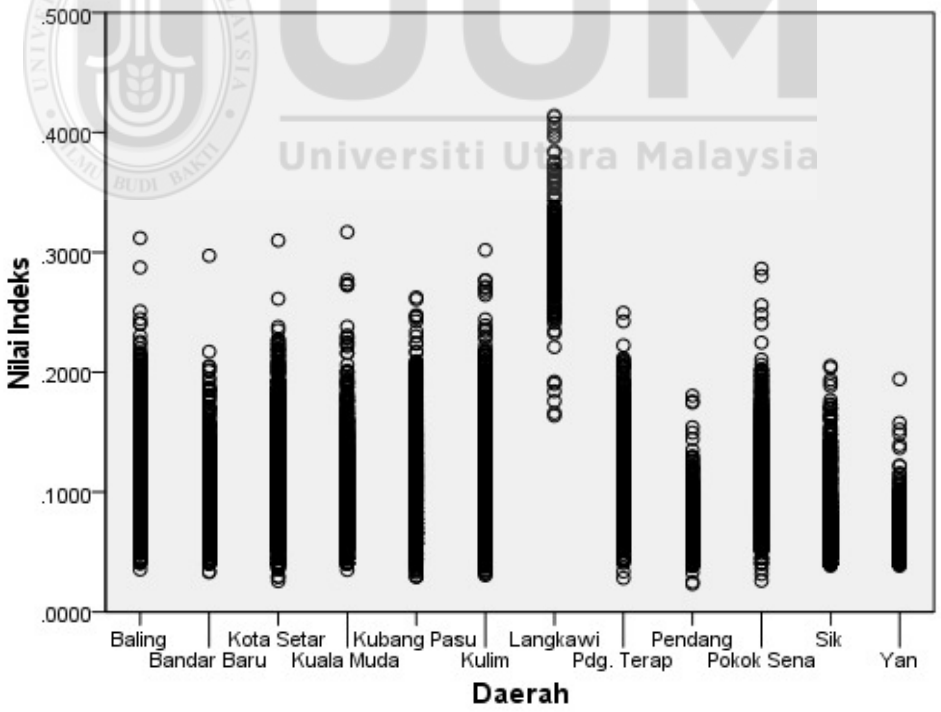


Figure 4.1. Comparison plot of the overall index by district in Kedah.

Based on Figure 4.1, it can be inferred that Langkawi district has higher index value in terms of eligible applicants for zakat in comparison to the other districts included in

this study. Essentially, this indicated that Langkawi has the largest pool of qualified individuals for zakat distribution based on the specific criteria that have been considered within this particular research endeavor.

As conclusion, a decision that based on the group prior which are the combination of expert opinion and data information tend to be more informative. It also helps in producing more accurate decisions in choosing the most eligible recipient to receive zakat and eliminate bias. The index value among the applicants for objective weight, subjective weight and aggregated weight did not show much difference since the real data of zakat recipients is used. Therefore

At the end of this study, the criteria are used to develop a model that can be used to investigate the relationship between the criteria. The relationship of criteria helps to determine the importance of the criteria that can be used to represent the asnaf profile. Further explanation of model development is shown in Section 4.4.

4.4 Modelling of Geographically Weighted Regression (GWR) Model

Previous section discusses the importance of criteria in identifying the priority of zakat applicants to receive assistance. However, objective weight and subjective weight of the criteria prioritize different criteria in selecting the recipients. Therefore, the aggregated weight of the criteria is used to determine the relative importance of the criteria where per capita income, electronic tools, communication tools and employment status are the main criteria to identify zakat applicants.

Subsequently, the focus of this study is to examine the interrelation among criteria that exhibit variations across different districts specifically for the purpose of identifying the eligibility of zakat recipients. This method enables the identification of localized effects and trends that might remain concealed when employing the conventional

regression models. Additionally, an assumption is made that different district may exhibit different socioeconomic, cultural or environmental factors that influence the efficacy of the criteria used to determine the eligibility of zakat recipients.

Consequently, the Geographically Weighted Regression (GWR) model is regarded as the most suitable approach for analyzing the provided dataset. Prior to conducting GWR, several steps need to be taken to ensure the validity and reliability of the model results. The steps include reducing the dimension of the data through Factor analysis, examining the presence of multicollinearity and developing the model of zakat criteria. In general, there are 49 sub-criteria involved in the process of developing the model of zakat recipient criteria. However, the number of criteria is reduced by identifying the criteria that represent the majority of data variation where Factor analysis method is employed (Taherdoost et. al., 2022; Hair et. al., 2013). The list of criteria considered after the variable reduction is listed in Table 4.12.

Table 4.12

The list of criteria after variable reduction using Factor Analysis method.

No.	Criteria
1	Total income
2	Basic home convenience tools
3	Communication tools
4	Electronic tools
5	Employment status
6	Health status
7	Marital status
8	Protection
9	Food and drinks
10	Clothing
11	Education
12	Medication
13	Transportation
14	Type of property
15	Number of dependent
16	Number of households

After the variable reduction, there are 16 criteria that have been identified that represent the majority of sub-criteria. These criteria likely to capture the essential information needed to determine the eligibility of the recipient. In this study, total income is taken as dependent variable. Meanwhile, the other criteria are regarded as independent variable. This study interested in understanding the changes of independent variables that may influence the asnaf total income across the district.

However, before developing the model of zakat recipient criteria, this criterion is used to determine the correlation among the criteria to avoid unreliable regression coefficient and standard errors that results in incorrect conclusions. Thus, the multicollinearity of the criteria is tested to reduce the interpretability of the regression results and increase the coefficient standard error (James et. al., 2013; Shrestha, 2020). The presence of multicollinearity is seen from the VIF value obtained through multiple linear regression where the SPSS outcomes for the VIF is presented in Table 4.13.

Table 4.13

The list of criteria used to develop the zakat recipient criteria model.

Criteria	VIF
Electronic tools	5.329
Health status	2.229
Transportation	5.029

The VIF outcomes shows that there are three (3) criteria that fulfilled the VIF acceptance value which is VIF<10. Conversely, criteria that exhibit high VIF value VIF≥10 are removed from the model to reduce the VIF score and improve the model performance (Hadi & Chatterjee, 2015; Hermansson & Lundgren, 2022). Based on the results, the VIF value of the electronic tools (5.329), health status (2.229) and transportation (5.029) remain in the accepted range where value below 10 suggests

that the issue of multicollinearity is not a serious problem in regression analysis (Yilmaz et. al., 2007). Therefore, the variable can be used in the model development of zakat criteria.

The purpose of developing the model for zakat recipient criteria is to gain insights into the contributions of the identified criteria to variations in total income across districts. Besides, this study also aims to determine whether different districts employ different criteria in the process of identifying recipients or otherwise. Afterwards, the process is continued with the development of GWR model where GWR4 software is employed. The model of zakat recipient criteria is developed for the 12 districts in Kedah where the outcome of GWR and the parameter estimates of the model is presented in Table 4.14 and Table 4.15.

Table 4.14

The result of GWR for zakat criteria model.

	GWR result
R square	0.9603

As presented in Table 4.14, the value of coefficient determination (R^2) of the model is equal to 0.9603. This value indicates that approximately 96% of the variance observed in the asnaf income can be explained by independent variables which are electronic tools, health status and transportation. Therefore, this model is considered reliable in predicting the income of the asnaf and the criteria in different districts. The reliability of the criteria is determined based on the estimated values and *t* values as displayed in Table 4.15 where the $t_{statistics}$ is compare with the t_{table} in the distribution table at alpha 0.05 and $n = 11$, ($\pm t_{\frac{\alpha}{2},\alpha}$ = 2.201).

The result shows that transportation is the reliable criteria that can be used in determining the zakat recipients in each of the district since the $t_{statistics}$ is more than the t_{table}=2.201. An assumption that can be made to support the result is transportation considered as part of necessity for all individuals in order to access for basic necessities. It may be difficult for asnaf to access basic necessities such as food, healthcare and employment necessities without transportation. In addition, access to these necessities is crucial to improve the asnaf living conditions and breaking the cycle of poverty. Based on the study conducted by Wan Muhammad et.al (2018), the poor and needy are not only assisted in meeting the basic expenses, but they are also assisted in becoming self-sufficient and breaking free from the poverty and ultimately becomes a group that capable of giving zakat in the future.

Next, assistance for transportation is given to the asnaf for them to start their own business and improve their lives. Thus, transportation is considered as an important criterion in identifying the eligibility of recipients and improving their lives. As example, transportation in Langkawi district is considered important because there are lot of remote areas in the island where the access to transportation may be limited. The availability of transportation services can help to ensure that these recipients can access essential services, such as healthcare, education, and employment, which may not be available in their local communities.

Table 4.15

The results of model development for zakat recipient criteria by district.

Criteria/Districts	Intercept		Electronic tools		Health status		Transportation	
	est	*t*	est	*t*	est	*t*	est	*t*
Baling	-143878.8531	-0.6770	30273.9548	1.9792	110.9356	0.3465	1162.6581	3.2974
Bandar Baru	-280944.9000	-1.2847	16690.1227	1.5761	408.1080	1.4283	1408.0073	2.6066
Kota Setar	-405942.4067	-2.1066	9280.4350	0.9525	464.2157	1.7410	1891.5299	3.7335
Kuala Muda	-329288.7473	-1.7224	13674.4206	1.3987	439.2496	1.6560	1601.3440	3.1746
Kubang Pasu	-305100.4883	-1.5180	15263.2134	1.5198	426.6490	1.5663	1497.7821	2.8988
Kulim	-424482.6538	-2.1578	8438.3269	0.8596	468.6412	1.7388	1948.2869	3.7951
Langkawi	-318453.9361	-1.5500	7928.6615	0.7903	410.7934	1.4984	1968.5475	3.6935
Padang Terap	-428627.4673	-2.1822	8901.9447	0.9125	472.9123	1.7597	1919.5984	3.7788
Pendang	-387902.4951	-2.0461	10336.4462	1.0676	459.9502	1.7407	1821.7481	3.6351
Pokok Sena	-407860.6700	-2.1145	9304.5419	0.9555	465.2127	1.7445	1890.3453	3.7343
Sik	-419114.0631	-2.1577	10453.5749	1.0816	472.8525	1.7761	1822.1627	3.6451
Yan	-352799.0096	-1.8831	12004.7207	1.2411	448.4241	1.7062	1710.1817	3.4222

Meanwhile, electronic tools and health status are less important to determine the eligibility of the recipient for each district since the $t_{statistics}$ is less than the t_{table}=2.201. Therefore, a conclusion can be drawn that the main focus of zakat is on the financial situation and basic needs of those who are struggling financially regardless of their possession or health. Electronic tools and good health may certainly make life easier and more comfortable, but these criteria are less important to determine the eligibility of the recipient. However, it does not mean that health status is completely irrelevant. This is because in some cases, someone who is ill or disabled may have greater financial needs than someone who is healthy (Ncube, 2020; Hancock et.al., 2012).

Based on the $t_{statistics}$ result, it can be concluded that transportation is considered as importance criteria used to determine the zakat recipients in the districts. This suggests that transportation plays an important role in identifying those who are eligible for zakat assistance. The districts that are highly influence by transportation in identifying zakat recipients is Langkawi with estimated value 1968.5475 followed by Kulim (1948.2869), Padang Terap (1919.5984), Kota Setar (1891.5299), Pokok Sena (1890.3453), Sik (1822.1627), Pendang (1821.7481), Yan (1710.1817), Baling (1162.6581), Kuala Muda (1601.3440), Kubang Pasu (1497.7821) and Bandar Baru (1408.0073).

The estimated value of the regression model also explained the relationship of the criteria with income. Based on the results of model development above, there are 12 regression models for 12 districts in Kedah. According to the estimated value of the regression model, electronic tools, health status and transportation have a positive relationship with the income where 1 unit increase in the electronic tools, health status

and transportation will increase the income of recipients. As example, the estimated value of the regression model for Langkawi district for electronic tools, health status and transportation are 12781.7979, 452.7262 and 1677.2781. As example, if a zakat recipient is given access to electronic tools such as computers, it may enable them to access online learning resources or find a better job opportunity which could increase their income. Similarly, if they have a good health status, they may be able to work more efficiently and productively. Finally, if they have reliable transportation, they may be able to travel for work or for job interviews. Further discussion of the result for ZaKRi index and model of zakat criteria is discussed in Section 4.5.

4.5 Discussion

The main problem in this study is identifying the criteria that can be used to determine the eligibility of zakat applicants as recipients. In addition, there are lack of discussion in previous research on criteria of zakat recipients. In general, the criteria used to determine the zakat recipient must fulfill the Islamic laws of Had Kifayah and Maqasid Shariah. Thus, expert opinion is required in identifying the important criteria. Then, data collection that is based on expert opinion and data information is conducted to determine the level of importance of the criteria identified. The data information used is based on the real data of zakat recipients collected from LZNK database. Thus, the results produced are based on the real application of LZNK in identifying the zakat recipients.

The findings that are based on the expert opinion show that most of the experts agree that per capita income, number of dependent, communication tools and electronic tools as the top 4 main criteria that can be used to determine the priority of zakat recipient. This decision was made after experts carefully assessing each criterion's significance

according to Islamic law. This decision is made to satisfy the requirement of Had Kifayah and Maqasid shariah of applicants to preserve their dignity and religion. The purpose of this decision is to alleviate the burden on the poor and needy by providing them with a certain amount of money to meet their basic needs and effectively combat poverty.

Meanwhile, the findings that are based on the data information of zakat recipients show that electronic tools, employment status, clothing and medication are the main criteria that can be used to determine the priority of the recipients. In zakat, employment status of the recipients is important because unemployment brings insufficient income that makes them struggle to afford nutritious food and leads to poverty (kanbak & Pinarcioglu, 2019; Sulaiman et. al., 2021). Besides, incomes also needed for health care and medication purposes where it is considered as important expenditure for the poor household in Kelantan (Ali et. al., 2022). Poor households often face numerous health challenges, including malnutrition, infectious diseases, and chronic illnesses. Access to healthcare services and medicines can help prevent and treat these health problems, which can significantly improve their quality of life and enable them to be more productive members of society. Thus, zakat is given those with poor health and under medication. Zakat may be used to cover the cost of medical treatment and medicines for zakat recipients who cannot afford them. In addition, zakat institutions can contribute to poverty reduction by improving the health outcomes of poor households and zakat recipients. In turn, can enable them to be more productive members of society, lift themselves out of poverty, and contribute to economic development (Ali et. al., 2022). Meanwhile, clothing considered as important criteria because it is considered as basic human need from the shariah perspective. It is part of the responsibility of the Muslim community to ensure that the poor and needy have

access to adequate clothing and dress decently (Husin et. al., 2019). Therefore, the poor and needy are able to fulfill their obligation and maintain their dignity towards religion.

From the weighted value findings, the index of zakat recipient is developed. It shows that both findings produce different results thereby leading to varying priorities for the allocation of zakat to the recipients. This is because expert opinion is based on the experience, knowledge and expertise of individuals who are considered specialists in their field. These opinions are subjective and can be influenced by personal biases or other factors such as education and professional experience. Meanwhile, data information is collected through the empirical methods where it involves collecting quantitative and qualitative data then analysed to draw conclusions. The findings that based data information are based on concrete evidence and are less subjective. Thus, both findings may have different perspective and interpretation that lead to varying conclusions.

Therefore, this study decided to aggregate the information to determine the level of importance of the criteria in identifying the eligibility and priority of the applicant to receive zakat. It also allows for more efficient distribution of zakat where the recipient eligibility can be identified without conducting the time-consuming assessments for each of the recipient. The result of this finding shows that per capita income, electronic tools, communication tools and employment status are the main criteria to determine the eligibility of recipients. This discovery aligns with the way zakat is managed in Selangor, where the eligibility of zakat recipients is determined based on their per capita income and employment status (Pahruddin, 2023; Khairudin et. al., 2020).

Additionally, this finding also provides an objective assessment of zakat recipient's eligibility through the development of ZaKRi index.

Through the ZaKRi index, the priority of recipients to receive zakat is determined by the index ranking. This index considers various factors such as level of poverty, income, and social vulnerability in order to rank the asnaf priority based on their level of need. While the primary criterion is utilized to ascertain the eligibility of a recipient, it is essential to recognize that the additional criteria play a crucial role in conducting a comprehensive evaluation of the applicant for zakat assistance. Furthermore, since zakat is distributed by districts therefore, the ZaKRi index is develop for each district in Kedah. It allows for zakat funds to be distributed more effectively to those in greatest need within a particular area while ensuring efficient use of the funds and providing support to the most marginalized populations. Hence, this index can be considered as an important tool to ensure that zakat is distributed fairly and efficiently to those in need within the district.

The index of the applicants using the objective weight, subjective weight and aggregated weight did not show much difference since the real data of zakat recipients is used. Those applicants are eligible to receive the zakat. However, the index value is determined to provide insights into how specific criteria contribute to determining the priority levels assigned to different applicants. By understanding the impact of these criteria on the overall index values, stakeholders can gain valuable insights into the nuanced dynamics shaping the allocation of zakat resources among applicants. This information can be instrumental in refining and optimizing the zakat distribution process to align with the intended goals and principles of the program.

These findings also discover that Langkawi has a higher index value compared to other districts. It is measured in terms of the number of individuals who are eligible to receive zakat where Langkawi has a higher number of zakat recipients. It can be concluded that the poverty level in Langkawi is higher compared to another district in Kedah. An assumption that can be made is Langkawi occupied with the rural island that lacks infrastructure and other resources needed (Mamat et. al., 2021). However, most of the previous research related to zakat is focusing on Baling district. This is because Baling districts is known for high poverty rate among single parents and large population of Muslims (Mahamod, 2011). The primary activity of the community is agriculture, and a large proportion of the population is involved in the agriculture sector (Nor et. al., 2022). The large agriculture sector may also influence other aspects of the community such as availability of jobs, types of goods and services available and the overall standard of living. Thus, this study suggests for in-depth investigation to study the condition of each district and adjust the zakat recipient criteria based on the conditions of the districts. This is because each district may require different criteria to identify the eligibility of zakat recipients. Therefore, this study develops a model of zakat recipient criteria that considers the geographical characteristics specific to each district.

As a results, the regression model of zakat recipient's criteria is develop using the GWR method where the importance criteria for each district is determined. The special feature of this model is it can be used to analyse the zakat recipient criteria in different regions by allowing for a more localized and verifying the condition of the location to identify those in need (Kopczewska & Cwiakowski, 2021). The dependent variable of this model is income meanwhile, the independent variable of this model are electronic tools, health status and transportation. The selection process of independent variables

is an important step in developing a model that accurately represents the relationships among the variables. In this process, various procedures are implemented to identify the most relevant variables that contribute to the variation observed in dependent variable. The first procedure to conduct the selection process of independent variables is Factor Analysis. This is method is used to identify the underlying factors responsible for the variation in the observed variables. By analysing the correlations among the variables, Factor analysis can group them into a smaller set of latent factors that explain the observed variation. These factors can then be used as independent variables in the model to capture the underlying structure of the data.

Next, the model development process also considers the multicollinearity of the variables. The multicollinearity occurs when two or more independent variables are highly correlated with each other that cause issues in the model, such as unstable coefficients and reduced predictive power. In this study, multicollinearity is detect using the Variance Inflation Factor (VIF) calculated for each independent variable. The VIF value of 10 or higher (VIF≥10) is considered as problematic and should be removed from the model. In addition, this procedure helps to avoid the high dimension issue where the number of independent variables is larger than the number of observations in the dataset ($n < p$) which affect the accuracy and reliability of the regression model.

The outcome of the regression model shows that all the 12 districts in Kedah implements transportation as the important criteria used to determine the recipients since the $t_{statistics}$ is bigger that the t_{table} ($t_{statistics} > t_{table}$=2.201). This is because most of the zakat recipients lives in a remote area that is difficult to reach where it could affect their ability to access for basic necessities or services out of their area. It

can be seen from the estimated value of the regression model where the estimate value of transportation is higher in Langkawi districts followed by Kulim, Padang Terap, Kota Setar, Pokok Sena, Sik, Pendang, Yan, Baling, Kuala Muda, Kubang Pasu and Bandar Baru. Therefore, transportation is considered as important criteria in Langkawi because there are several islands in the districts. Due to the distance of the islands and mainland, the access for transportation is challenging especially those who are poor such as the zakat recipients. Providing transportation assistance can help overcome these challenges and improve the quality of life for those who are poor. Compared to Bandar Baru, this district is less critical in fulfilling the need of transportation for zakat recipients. This is because Bandar Baru is more urbanized compared to Langkawi. Thus, an assumption can be made that this district may have better developed transportation infrastructure such as public transportation and roads that helps them to access for necessities and services easily without relying on transportation assistance.

As conclusion, it is possible for the districts in Kedah to have different criteria in identifying the zakat recipients based on the demographic condition and spatial factors. This is because the level of need for zakat assistance can vary depending on factors such as income, education, age, and location. Areas with lower income and lower education levels, as well as those farther from urban centres, may have a greater need for zakat assistance due to the lack of job opportunities and resources. To ensure that zakat is distributed in a fair and equitable manner, it is important to take into account both demographic conditions and spatial factors to determine the criteria of the recipients. This can help to ensure that zakat resources are directed towards those who are most in need, regardless of their location within Kedah.

CHAPTER 5

CONCLUSION

5.1 Introduction

The main purpose of this chapter is discussing the overall conclusion drawn from this study based on the research objectives that were used to develop an index and model the criteria of zakat recipient in Kedah. Thus, Section 5.2 presented the research overview of the research. Nonetheless, there are several drawbacks in this study that need to be considered by other researchers for future improvement. In order to address the issue discussed in the previous section, the limitation and future research direction are addressed in Section 5.3 and Section 5.4.

5.2 Research Overview

The topic related to zakat recipient criteria is less discussed in previous studies where it led to difficulty in finding the information, suggestion and improvement referred to the criteria of zakat applicant. It becomes challenging to those who are interested to understand about the zakat recipients' criteria in the literature. This is because the process of determining the level of importance of the criteria that meet the requirement of syariah is tedious, time-consuming and requires expert judgement. Therefore, an assumption that identifying the criteria of zakat recipient helps to speed up the process of selecting the eligible recipient is made. In addition, researchers or stakeholder might find it necessary to propose enhancements to the criteria for zakat applicants based on their observation, experiences or the limited information that is available. Furthermore, it also ensures that the zakat funds are distributed to those in need and qualified as recipients. Thus, by clearly defining the criteria of recipients the selection process

becomes more efficient and effective. However, the assumption can only be determined through further research and analysis.

This study encompasses three (3) main phases to achieve the research objective. The first phase is identifying the criteria of zakat recipient to fulfill the first research objective. Qualitative approaches are implemented to collect information and verify the criteria with the expert in zakat distribution. Literature review and interview is the approaches used to collect information of the criteria that fulfill the Islamic law of Had Kifayah and Maqasid Shariah. Had Kifayah is a monetary approach that determines the minimum number of resources required by a household to meet their fundamental needs according to Shariah principles. This approach expedites the identification of an applicant's status as non-poor, poor, or hard-core poor. Therefore, the criteria used to determine the human necessity is outlined based on the Maqasid Shariah or the human needs which include the religion, physical-self, knowledge, family and wealth. These needs are categorized into *daruriyyat* (necessities), *hajiyyat* (complimentary) and *tahsiniyyat* (embellishment). However, it is sufficient to meet the needs of daruriyyat and hajiyyat to ensure the continuity of quality life of the asnaf. It aligns with the humanitarian and social objectives of zakat which seek to alleviate poverty and promote the well-being of the less fortunate.

Following a survey of the literature and interviews with zakat personnel, 34 criteria were found. Then, the verification by the expert is carried out to validate the level of importance of criteria to identify the zakat recipient. The result of the verification shows that most of the experts agree that age is not an important criterion to determine the eligibility of zakat recipient since zakat is given to all ages as long as they belong to one of the asnaf groups. It is important to provide the asnaf at least with the

necessities and complimentary and it is hoped that the funds given could help the asnaf to improve their living. Next, the criteria are grouped into 17 groups under the same basis such as specific common factor, principle or theme that ties together the criteria within each group for further analysis. The purpose of grouping the criteria is to streamline the analysis and interpretation of the data where it helps in identifying the relationship and trends within each category making it easier to draw meaningful conclusion from the vast number of criteria.

In the second phase of the study, the criteria used to identify zakat recipients were weighted based on data information and expert opinion to determine the level of importance of criteria. The data information provides a more systematic and unbiased decision meanwhile, expert opinion reflects the personal perspective and preferences of the decision maker. To determine the number of criteria considered important in identifying recipients, the Pareto analysis ratio of 80:20 was used to streamline the identification process for zakat recipients emphasizing that not all criteria are equally influential. This approach allows for a focus on criteria that significantly influence the outcome and align with the goal to identify those in need. This ratio indicates that 80% of the zakat recipients can be identified based on 20% of the criteria.

Following the application of the Pareto analysis ratio to determine the importance of the criteria based on the weighted values, the top four criteria based on data information are electronic tools, employment status, clothing and medication. In contrast, per capita income, number of dependents, communication tools, and electronic tools emerge as the primary criteria based on expert preferences. The difference in outcomes between data information and expert opinion led to a decision that was not well-supported by objective measures and subjective measures.

Therefore, the weights of the criteria are aggregated to balance the efficiency and personal preferences for decision making. The findings indicated that per capita income, electronic tools, communication tools and employment status are the important criteria used in selecting eligible applicants. These results align with the practice of zakat management in Selangor which employs per capita income or income and employment status as criteria for determining the zakat recipients (Aminuddin et. al., 2020; Masruki et. al., 2021; Khairudin et. al., 2020; Radzi & Ab Rahman, 2019).

Then, the aggregated weight is used to develop the Zakat Recipient Index (ZaKRi) in each district in Kedah to determine the priority of zakat applicants to receive zakat. The rationale behind this approach is that zakat is distributed by district, therefore the index is generated by district to allow decision maker to quickly assess the current condition and make decision based on the local context. This ensures that the distribution of zakat is responsive to the unique challenges and requirements of the communities within Kedah, recognizing that these factors can vary significantly from one district to another. According to the ZaKRi index, Langkawi has the highest number of zakat recipients where it suggests that this district has been identified as having a higher level of need compared to other districts. The assumption drawn from this observation is that the Langkawi district may experience a higher level of poverty within Muslim community. According to Din (2022), there is a need for further improvements in various aspects to ensure that the less unfortunate individual in Langkawi can enjoy a better quality of life. In conclusion, different districts within a region can experience varying levels of economic prosperity or challenges. Therefore, ZaKRi index serves as tool to identify and prioritize areas with higher needs. However, the results of the index using the objective weight, subjective weight and aggregated weight in this study do not significantly differ due to the utilization of zakat recipient

data obtained from LZNK. To better discern differences in eligibility and priority among zakat recipients, it is suggested to utilize data from zakat applicants.

Nevertheless, relying solely on the weighted values is inadequate for assessing the importance of the criteria within each district. In addition, each district has definite demographic conditions, and it is assumed that different criteria are employed to identify zakat recipients in each district. To validate this assumption, a model was developed to assess the relationship and level of importance of the criteria used in determining zakat recipients. The development of the model incorporating the spatial factors where GWR method is applied. GWR is a model developed in geographic context which makes it more precise compared to traditional regression model that assumes the relationship of the criteria are the same across the entire study area. This model is developed in the final phase of data analysis where the last research objective is fulfilled. However, the findings from GWR may not satisfy the purpose of the regression model as the availability of the appropriate data that fit the model is limited. The data used for the model development is the real data of zakat recipients where the model revealed that transportation is the important criteria used to determine the recipients for all the 12 districts in Kedah. Even though there is a spatial difference, the districts apply the same criteria to determine the recipients It is assumed that the accuracy of the assessment may be compromised, as different criteria might be applicable in describing the unique needs of each district, consequently influencing their respective income levels. The regression model also has estimated that Langkawi is the primary district facing transportation issues. This suggests that there is a concurrence between the regression model's estimation of transportation issues and the overall need for zakat assistance in Langkawi. This implies that, according to the model and ZaKRi index findings, the transportation challenges in Langkawi play a

significant role in identifying individuals eligible for zakat assistance. The use of transportation-related criteria is not exclusive to Langkawi; rather, it is uniformly applied to all districts. It may not sufficiently address the nuanced differences between districts, potentially leading to resource misallocation and overlooking critical factors specific to each community. Tailoring criteria to the unique contexts of each district is essential for a more accurate and equitable assessment.

In conclusion, while the study provides valuable insights into the criteria for zakat recipients and introduces the ZaKRi index, it emphasizes the importance of continuous research and refinement. Ongoing investigations, particularly those incorporating zakat applicant data, are essential for enhancing the accuracy and effectiveness of criteria selection and distribution processes. The complexities of local contexts and the potential variations between districts underscore the necessity for adaptable and tailored approaches in zakat management. These findings also contribute towards theoretical knowledge and real-life application where further discussion is provided in the next section.

5.3 Contribution and Limitation

According to the research overview described in Section 5.2, which implies the research objectives, the focus of this study is to make a significant contribution towards theoretical knowledge and the real-life application. The implication and contribution of this study are expected to provide valuable insight and perspective for academic and zakat distribution management fields which are discussed respectively in Section 5.2.1 and Section 5.2.2 as follows. Meanwhile, the limitation of this study is discussed in Section 5.3.3.

5.3.1 Academia

The contribution of this study to the academic field is its emphasis on the development and continuation of research on zakat recipient criteria which can be used in zakat distribution. The findings can also assist other researchers in conducting further in-depth studies on the subject. In addition, it also encourages a collaboration and interdisciplinary research by bringing together scholars from various field to study about zakat, the criteria involve, and the Islamic law should be fulfilled. Thus, it can fill the gaps in existing literature and provide new insight to advance knowledge and understanding related to zakat criteria.

Next, the application of statistical approach to develop index of zakat. The unique characteristic of the index developed in this study is the utilization of two weights namely objective weight and subjective weight that aggregated. An index developed using the aggregated weight is likely to be more robust and resistant to changes in individual indicators. This index takes into account the real-life data information and expert opinion where the index is built with a comprehensive and unbiased approach. Thus, the overall score is less susceptible to random fluctuations in individual indicators. Besides, the index developed in this study facilitates the communication of complex information in a comprehensible manner. By generating a single score that reflects multiple dimensions of performance, the index can help to convey the overall picture in a comprehensible manner. In addition, the index can be customized to align with the priorities and values of various stakeholders where it enables the index to be tailored to address the specific concerns of a particular group. The index developed using the aggregated weight is advantageous to many parties, especially researchers in seeking an expedient and uncomplicated approach to evaluate and compare the priority of applicants to receive zakat.

Although the index construction process facilitates the determination of zakat recipients' priority in each district based on the criteria's weighting, it does not provide an explanation for the extent of the criteria's significance in determining eligible recipients. Therefore, it is crucial to develop a model that evaluates the level of significance and relationship of the criteria to ascertain their relative importance in each district especially when considering the spatial effect. The method used to develop the model in this study employs the Geographically Weighted Regression (GWR) method. Previously, traditional regression methods (e.g., ordinary least square regression) have been used in the zakat field. However, the latter methods assume that a given variable or relationship is constant across the study area. In contrast, the GWR approach addresses the presence of spatial heterogeneity in the datasets where the variable studied varies for each location. Spatial heterogeneity can occur due to several factors such as the differences in socio-economic conditions, environmental factors, population demographics or any real world-phenomena. This method is applicable to the current context of study, which examined the population across 12 districts that have their own unique socio-economic environment. Consequently, the relationship between the independent variables and dependent variables can be modelled specifically according to specific locations across the study area.

Besides, this study also incorporates the Islamic laws of Had Kifayah and Maqasid Shariah. Islamic law covers a broad range of legal provisions and principles that can have an impact on various aspects of society. Despite its significance, discussion and analysis related to Islamic law are frequently limited and poorly represented in academic and intellectual circles leading to misunderstanding and misconceptions about the role of Islamic law in modern societies. The study conducted takes into account the overall well-being and the broader objectives of the Islamic social system

not just the financial need of the individuals. It promotes a comprehensive understanding of the principles and values of Islam and can serve as as a tool to educate individuals, regardless of their religious affiliations, about the significance of social justice, empathy, and community development in the Islamic heritage. Therefore, it is important for scholars to expand future studies and discussion of zakat that based on Islamic law. Apart from academia, this study also contributes to zakat distribution management in LZNK where further discussion is shown in Section 5.3.2.

5.3.2 Zakat Distribution Management in LZNK

Research on zakat distribution can contribute in various ways such as improving the understanding of zakat laws and principles as well as its purpose and objectives. It also can lead to improved compliance and administration of zakat distribution management. Besides, the finding of this study also can be used as reference in identifying the zakat recipient and the priority of the recipient to receive zakat. Indirectly, it helps the zakat distribution management to speed up the process of identifying the qualified applicant as recipient. In addition, it also helps in identifying any regional disparities in the distribution of zakat and address any imbalances in the allocation of resources.

Lastly, the zakat distribution management can re-enact the recipient selection process that involve the Islamic law. The process of identifying the eligible zakat recipient should be shared with the society for their knowledge on how the selection process is conducted to avoid misunderstanding. While conducting this study, there are several implications faced by the researcher. Further discussion of the implication is discussed in the next section.

5.3.3 Limitation

Even though this study has presented a significant contribution, there are few limitations that have been identified in this study. This limitation must be highlighted as it can be used to make some improvement in future research.

First, the availability of academic journals discussing the criteria for zakat distribution is limited. Although there is discussion about the criteria, it is not clearly listed or universally agreed that leads to differing interpretations and implementation of zakat distribution criteria. In addition, the process of identifying and verifying the criteria with the experts becomes difficult and time consuming especially when Malaysia undergoing the Movement Control Order (MCO). Thus, further discussion and explanation about the criteria verified and the Islamic law involve cannot be carried out thoroughly. Hence, scholars must emphasize the limitation of the research related to zakat recipient criteria to prevent it from becoming a hindrance to the development of a comprehensive model in the future.

The second limitation is related to difficulty in acquiring the expert opinions which are zakat personnel and Amil. This is because data collection is conducted solely online during the Covid-19 pandemic. The online data collection results in lower response rates as well as a lack of depth and richness in the data collected. Additionally, some zakat personnel and amil did not have access to the internet and technological understanding which cause a greater number of respondents unable to share their opinions and information that could be used to improve the generalizability of this study. These limitations highlight the importance of considering multiple data collection approach in order to obtain comprehensive and reliable information about the zakat recipient criteria.

The third limitation is related to the software used to model the zakat recipient criteria. There is a scarcity of suitable software for developing the model and finding the appropriate software is time-consuming. This study applied the GWR software to develop the model for the criteria. However, the amount of data that can be stored by the software is limited. The maximum amount of data that can be stored by the software is only 6000 but this study has more than 20,000 data. Besides, it also can cause high dimension issues. Therefore, this study must change the structure of the data as an alternative to overcome the issues. The alternative taken is reducing the number of criteria using Factor analysis and VIF value. At the same time, the researcher of this study needs to analyst the data repeatedly to meet the software deficiencies.

Lastly is the availability of data, specifically the reliance on zakat recipient data. This study primarily relies on information from zakat recipients to develop and assess the priority of criteria using objective weight, subjective weight, and aggregated weight. However, depending on zakat recipient data introduces several limitations, such as a limited perspective on the broader population's needs and characteristics. Additionally, using this data may inherently bias the identified criteria towards the preferences and perspectives of those who have already received assistance. This bias could influence the prioritization of criteria and might not fully represent the diverse range of needs within the community. At the same time, the index results may not exhibit substantial differences between the different weightings, potentially impacting the robustness of the conclusions.

Despite the limitations mentioned above, this study was completed successfully. As a result, it is hoped that the limitations discovered in this study will be used in the future by scholars to produce progressive and better research.

5.4 Future Research

Based on the limitation in the previous section, there are few suggestions that can be used for future research. The first suggestion is explored and identify the most effective and widely accepted criteria for zakat distribution by reviewing existing literature, consulting with experts, and conducting empirical research to analyse factors such as income level, household size, debt, health status, and other relevant factors that affect the financial situation of zakat recipients. This can improve the distribution process, ensure funds go to those in need, and increase transparency and accountability.

Next, future researcher can consider using multiple data collection approaches such as face-to-face interviews, phone interviews, survey and other approaches to obtain more diverse and reliable data. Face-to-face interview and phone interviews can provide in-depth and nuanced data as the respondents may feel comfortable to share their experiences in a conversional setting. Thus, a more comprehensive understanding of zakat distribution criteria is obtained. It also ensures that a wider range of opinions and experiences are represented in the data.

In conducting research that involves a large amount of data, it is crucial to use appropriate software that can handle and analyse the data efficiently. Using appropriate software is important in research that involves a large amount of data. In the case of modelling the zakat recipient criteria, suitable software should be chosen to prevent data loss and high dimensionality issues. Researchers can explore different software options and seek the help of experts to ensure the reliability of the software. This will

lead to accurate data analysis and reliable results, contributing to the development of a comprehensive and effective model for zakat distribution criteria. Future research also can examine how zakat distribution contributes to poverty reduction in Malaysia and evaluate the effectiveness of different zakat distribution methods.

In conclusion, zakat distribution plays an important role in poverty reduction efforts in Malaysia, but there are limitations and challenges in the current distribution system. Additionally, developing a more comprehensive and widely accepted set of criteria for zakat distribution can ensure that funds are distributed to those who are most in need and provide greater transparency and accountability in the distribution process. Future research can further explore these issues and investigate the impact of zakat distribution on overall poverty reduction in Malaysia. Overall, addressing these challenges can enhance the effectiveness of zakat distribution in reducing poverty and improving the well-being of the society.

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APPENDIX A

Zakat Recipient Data in Kedah for Objective Weight - Baling District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A1475	1.0000	0.3500	0.3684	0.1367	1.0000	0.3974	0.4990	0.2000	0.0333	0.0104	0.1992	0.0170	0.0381	0.0088	0.5821	0.5996	0.3951
A1407	1.0000	0.3500	0.3158	0.4107	1.0000	0.3974	0.0000	0.3750	0.2000	0.0104	0.1355	0.0224	0.0943	0.3028	0.5950	0.3835	0.2917
A1815	0.0000	0.4500	0.4211	0.1367	1.0000	0.3974	0.4990	0.3350	0.0333	0.0260	0.2789	0.0425	0.0164	0.0000	0.7261	0.6226	0.3951
A1126	1.0000	0.4000	0.4211	0.4107	1.0000	0.3974	0.0000	0.1760	0.2333	0.0062	0.3586	0.0127	0.0661	0.0448	0.5821	0.3973	0.2756
A1543	1.0000	0.3500	0.3158	0.4107	1.0000	0.3974	0.0000	0.2630	0.3333	0.0062	0.2390	0.0059	0.0275	0.0087	0.5821	0.3858	0.2756
A1688	1.0000	0.5000	0.4737	0.4107	1.0000	0.3974	0.0000	0.1760	0.0833	0.0052	0.1594	0.0119	0.0369	0.0864	0.4536	0.6054	0.2917
A678	1.0000	0.3000	0.2632	0.4107	0.0000	0.3974	0.0000	1.0000	0.2000	0.1663	0.2590	0.0170	0.0464	0.1374	0.5862	0.5297	0.2917
A1094	1.0000	0.3000	0.2632	0.4107	1.0000	0.3974	0.4990	0.2500	0.0000	0.0104	0.2390	0.0068	0.0488	0.0157	0.3606	0.1815	0.2917
A971	1.0000	0.1500	0.1053	0.4107	1.0000	1.0000	0.0000	0.2000	0.0333	0.0052	0.1594	0.0136	0.1320	0.0694	0.4969	0.1758	0.4194
A1299	1.0000	0.4000	0.3684	0.1367	1.0000	0.0000	0.4990	0.2000	0.0600	0.0156	0.1195	0.0227	0.0525	0.0694	0.5821	0.3915	0.3951
⋮																	⋮
A538	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A566	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A592	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A759	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A831	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1060	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1114	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1554	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1729	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Zakat Recipient Data in Kedah for Objective Weight – Bandar Baru District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A577	1.0000	0.3500	0.3158	0.4107	1.0000	0.3974	0.0000	0.3000	0.0333	0.0052	0.1594	0.0170	0.0523	0.0458	0.5950	0.6226	0.4194
A543	1.0000	0.5000	0.4737	0.4107	1.0000	0.3974	0.0000	0.0000	0.0000	0.0000	0.0000	0.3398	0.0528	0.0938	0.7389	0.5881	0.2756
A387	1.0000	0.4000	0.3684	0.1367	1.0000	0.3974	0.0000	0.5000	0.0333	0.0000	0.3187	0.0068	0.0415	0.0000	0.5821	0.3984	0.4194
A601	1.0000	0.5500	0.5263	0.0000	1.0000	0.3974	0.0000	0.1750	0.0267	0.0052	0.3586	0.0510	0.0447	0.0848	0.4536	0.6111	0.3951
A551	1.0000	0.4500	0.4211	0.4107	1.0000	0.3974	0.0000	0.3500	0.0000	0.0000	0.3586	0.0170	0.0383	0.0379	0.4536	0.4203	0.2756
A638	1.0000	0.4500	0.4211	0.1367	1.0000	0.3974	0.0000	0.4100	0.0333	0.0031	0.1992	0.0170	0.0559	0.2296	0.4932	0.4146	0.1722
A661	1.0000	0.3500	0.3158	0.2740	1.0000	0.6026	0.0000	0.1250	0.0833	0.0416	0.2390	0.0136	0.0562	0.1163	0.4536	0.4030	0.3160
A584	1.0000	0.2000	0.1579	0.1367	1.0000	0.3974	0.4990	0.3875	0.0333	0.0104	0.0398	0.0170	0.0789	0.0088	0.5950	0.0576	0.2756
A560	1.0000	0.4500	0.4211	0.1367	1.0000	0.3974	0.0000	0.4000	0.0167	0.0052	0.2390	0.0510	0.0351	0.0088	0.5821	0.1712	0.3951
A431	1.0000	0.3000	0.2632	0.1367	1.0000	0.3974	0.0000	0.1000	0.1167	0.0156	0.1394	0.0102	0.0526	0.0088	0.5821	0.3954	0.4194
⋮																	⋮
A447	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A499	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A545	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A603	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A621	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A650	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A656	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A662	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A663	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A707	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Zakat Recipient Data in Kedah for Objective Weight – Kota Setar District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A3236	1.0000	0.3500	0.3158	0.1367	1.0000	1.0000	1.0000	0.3000	0.0167	0.0021	0.1195	0.0000	0.0564	0.0330	0.5976	0.3743	0.3951
A5386	1.0000	0.4500	0.4211	0.2740	1.0000	0.3974	0.4990	0.3500	0.1333	0.0208	0.1594	0.0510	0.1061	0.0821	0.5976	0.4261	0.2756
A5140	1.0000	0.3500	0.3158	0.0000	1.0000	0.3974	1.0000	0.0000	0.0000	0.0000	0.1594	0.0510	0.0246	0.0000	0.5976	0.5881	0.3951
A4248	1.0000	0.5500	0.5263	0.1367	0.0000	1.0000	0.4990	0.1500	0.0333	0.0104	0.5976	0.0510	0.0404	0.0026	0.8715	0.6111	0.4194
A4804	1.0000	0.4000	0.3684	0.4107	1.0000	0.3974	0.4990	0.2000	0.0333	0.0208	0.2390	0.0850	0.0307	0.0000	0.5976	0.3858	0.2756
A3801	1.0000	0.3000	0.2632	0.0000	1.0000	0.3974	0.4990	0.2000	0.0333	0.0104	0.4781	0.0180	0.0537	0.0379	0.5821	0.3892	0.4194
A4558	1.0000	0.3000	0.2632	0.0000	1.0000	1.0000	0.4990	0.0000	0.0000	0.0000	0.1992	0.0000	0.0558	0.0117	0.5821	0.3685	0.4194
A4456	1.0000	0.3500	0.3158	0.4107	1.0000	0.3974	0.5010	0.2550	0.0000	0.0000	0.1594	0.0935	0.0662	0.0088	0.4536	0.3754	0.2756
A3718	1.0000	0.4500	0.5789	0.2740	1.0000	0.3974	0.0000	0.1500	0.0667	0.0104	0.1992	0.0340	0.1325	0.1869	0.5821	0.4030	0.4194
A5784	0.0000	0.5000	0.4737	0.1367	1.0000	0.3974	1.0000	0.0500	0.0500	0.0104	0.1195	0.0000	0.0996	0.0791	0.5950	0.3754	0.2756
⋮																	⋮
A5631	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5667	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5688	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5724	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5749	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5835	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5842	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5890	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5893	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5906	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Zakat Recipient Data in Kedah for Objective Weight – Kota Setar District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A3236	1.0000	0.3500	0.3158	0.1367	1.0000	1.0000	1.0000	0.3000	0.0167	0.0021	0.1195	0.0000	0.0564	0.0330	0.5976	0.3743	0.3951
A5386	1.0000	0.4500	0.4211	0.2740	1.0000	0.3974	0.4990	0.3500	0.1333	0.0208	0.1594	0.0510	0.1061	0.0821	0.5976	0.4261	0.2756
A5140	1.0000	0.3500	0.3158	0.0000	1.0000	0.3974	1.0000	0.0000	0.0000	0.0000	0.1594	0.0510	0.0246	0.0000	0.5976	0.5881	0.3951
A4248	1.0000	0.5500	0.5263	0.1367	0.0000	1.0000	0.4990	0.1500	0.0333	0.0104	0.5976	0.0510	0.0404	0.0026	0.8715	0.6111	0.4194
A4804	1.0000	0.4000	0.3684	0.4107	1.0000	0.3974	0.4990	0.2000	0.0333	0.0208	0.2390	0.0850	0.0307	0.0000	0.5976	0.3858	0.2756
A3801	1.0000	0.3000	0.2632	0.0000	1.0000	0.3974	0.4990	0.2000	0.0333	0.0104	0.4781	0.0180	0.0537	0.0379	0.5821	0.3892	0.4194
A4558	1.0000	0.3000	0.2632	0.0000	1.0000	1.0000	0.4990	0.0000	0.0000	0.0000	0.1992	0.0000	0.0558	0.0117	0.5821	0.3685	0.4194
A4456	1.0000	0.3500	0.3158	0.4107	1.0000	0.3974	0.5010	0.2550	0.0000	0.0000	0.1594	0.0935	0.0662	0.0088	0.4536	0.3754	0.2756
A3718	1.0000	0.4500	0.5789	0.2740	1.0000	0.3974	0.0000	0.1500	0.0667	0.0104	0.1992	0.0340	0.1325	0.1869	0.5821	0.4030	0.4194
A5784	0.0000	0.5000	0.4737	0.1367	1.0000	0.3974	1.0000	0.0500	0.0500	0.0104	0.1195	0.0000	0.0996	0.0791	0.5950	0.3754	0.2756
⋮																	⋮
A5631	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5667	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5688	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5724	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5749	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5835	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5842	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5890	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5893	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A5906	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Zakat Recipient Data in Kedah for Objective Weight – Kuala Muda District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A1391	1.0000	0.8000	0.7895	0.1367	1.0000	0.3974	0.0000	0.5080	0.0000	0.0000	0.6375	0.0340	0.0430	0.0275	0.5821	0.6169	0.3160
A1701	1.0000	0.5000	0.4737	0.1367	1.0000	0.3974	0.4990	0.4000	0.0000	0.0104	0.2390	0.1020	0.0811	0.0694	0.6371	0.2618	0.2756
A2576	1.0000	0.5500	0.5263	0.1367	1.0000	0.0000	0.4990	0.5000	0.1667	0.0114	0.3984	0.0204	0.0671	0.2561	0.3606	0.1953	0.2917
A1737	1.0000	0.4500	0.4737	0.0000	1.0000	0.0000	0.0000	0.8250	0.1000	0.0208	0.5478	0.0345	0.0546	0.1033	0.5950	0.1930	0.2756
A1703	1.0000	0.3500	0.3684	0.1367	1.0000	0.3974	0.0000	0.1500	0.0667	0.0312	0.2390	0.0765	0.0808	0.0945	0.7147	0.6226	0.3951
A1360	1.0000	0.2500	0.3684	0.4107	1.0000	0.3974	0.0000	0.1500	0.2000	0.0000	0.2390	0.0255	0.0738	0.0799	0.3606	0.6457	0.3951
A1738	1.0000	0.1500	0.1053	0.1367	1.0000	0.3974	0.5010	0.0000	0.0000	0.0000	0.1195	0.0765	0.2213	0.1467	0.7276	0.3915	0.2756
A1061	1.0000	0.3000	0.2632	0.0000	0.0000	1.0000	1.0000	0.1500	0.0000	0.0624	0.2789	0.1359	0.0123	0.0275	0.7389	0.2218	0.2756
A998	1.0000	0.5500	0.5263	0.0000	1.0000	0.3974	0.0000	0.5000	0.0333	0.0052	0.2390	0.1223	0.0469	0.2841	0.4536	0.1781	0.2917
A1889	1.0000	0.3000	0.2632	0.2740	1.0000	0.3974	0.0000	0.1250	0.0333	0.0156	0.2390	0.0076	0.0574	0.0289	0.7276	0.5996	0.3951
⋮																	⋮
A2745	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2786	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2795	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2802	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2841	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2842	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2864	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2935	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2941	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2942	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Zakat Recipient Data in Kedah for Objective Weight – Kubang Pasu District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A2210	1.0000	0.3000	0.2632	0.1367	1.0000	0.3974	1.0000	0.1200	0.0333	0.0104	0.1195	0.1842	0.0574	0.0242	0.5976	0.6226	0.3951
A1807	1.0000	0.5500	0.5263	0.4107	1.0000	0.3974	0.0000	0.5600	0.0667	0.0104	0.3586	0.0170	0.0335	0.0000	0.4536	0.6111	0.3951
A2113	1.0000	0.3000	0.2632	0.1367	1.0000	0.3974	0.4990	0.5500	0.0667	0.0104	0.2789	0.0119	0.0369	0.0105	0.5821	0.4030	0.3160
A1393	1.0000	0.2500	0.2105	0.1367	1.0000	0.3974	1.0000	0.0000	0.0000	0.0000	0.1195	0.0442	0.0541	0.0000	0.4536	0.3685	0.2756
A1907	1.0000	0.5000	0.4737	0.1367	1.0000	0.3974	0.0000	0.1325	0.1140	0.0234	0.4375	0.0918	0.0585	0.2022	0.4536	0.4589	0.3160
A2392	1.0000	0.3000	0.2632	0.1367	1.0000	0.3974	0.4990	0.2000	0.0333	0.0104	0.1394	0.0935	0.0615	0.0000	0.4536	0.4011	0.2756
A1358	1.0000	0.2000	0.1579	0.1367	1.0000	0.3974	0.0000	0.3500	0.0333	0.0312	0.2390	0.0510	0.1230	0.1267	0.5862	0.3915	0.5388
A2603	1.0000	0.4500	0.4211	0.1367	1.0000	0.3974	0.5010	0.1000	0.0333	0.0000	0.1594	0.0680	0.0355	0.0947	0.5821	0.1642	0.2756
A2870	0.0000	0.3000	0.2632	0.1367	1.0000	0.3974	0.4990	0.9165	0.0000	0.0000	0.0598	0.0850	0.0602	0.0000	0.5976	0.3685	0.1722
A2245	1.0000	0.4000	0.3684	0.4107	1.0000	1.0000	0.0000	0.1750	0.0833	0.0312	0.1394	0.0059	0.0369	0.0000	0.3684	0.1815	0.3254
⋮																	⋮
A2636	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2693	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2714	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2758	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2771	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2778	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2894	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2901	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2906	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2917	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Zakat Recipient Data in Kedah for Objective Weight – Kulim District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A818	1.0000	0.3500	0.3158	0.4107	1.0000	0.3974	0.4990	0.3000	0.1667	0.0374	0.2390	0.0442	0.1335	0.5499	0.7261	0.4146	0.3951
A1001	1.0000	0.2500	0.2105	0.1367	1.0000	0.3974	1.0000	0.4000	0.0667	0.0312	0.2789	0.0340	0.0885	0.0552	0.7147	0.3915	0.3951
A903	1.0000	0.3500	0.3158	0.1367	1.0000	0.3974	1.0000	0.5000	0.1000	0.0000	0.2789	0.0340	0.0984	0.2943	0.5821	0.0230	0.3951
A767	1.0000	0.4500	0.4211	0.4107	1.0000	0.3974	0.4990	0.1625	0.0100	0.0031	0.3637	0.0168	0.1798	0.6637	0.5950	0.3851	0.2917
A1672	0.0000	0.3000	0.2632	0.1367	1.0000	0.3974	1.0000	0.1500	0.0333	0.0312	0.3586	0.1054	0.1148	0.3170	0.7389	0.6054	0.3951
A1592	1.0000	0.3500	0.3158	0.4107	1.0000	0.3974	0.4990	0.2000	0.0000	0.0000	0.3586	0.0085	0.0341	0.0000	0.5821	0.4011	0.4194
A1606	1.0000	0.2500	0.2105	0.4107	1.0000	0.3974	0.4990	0.1125	0.1600	0.0208	0.0677	0.0621	0.0639	0.0379	0.7147	0.5939	0.1722
A955	1.0000	0.5000	0.4737	0.1367	1.0000	0.3974	0.0000	0.1150	0.0933	0.0000	0.4382	0.1121	0.0719	0.0811	0.7147	0.6226	0.3951
A883	1.0000	0.3000	0.2632	0.1367	1.0000	0.3974	0.0000	0.4500	0.0167	0.0520	0.3187	0.0204	0.0799	0.1775	0.5821	0.6054	0.3951
A1094	1.0000	0.5000	0.4737	0.1367	1.0000	0.3974	0.4990	0.5000	0.0167	0.0052	0.3187	0.0255	0.0369	0.0000	0.3606	0.1988	0.2756
⋮																	⋮
A755	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A797	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A995	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1052	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1184	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1525	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1646	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1647	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1658	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Zakat Recipient Data in Kedah for Objective Weight - Langkawi District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A6	0.0000	0.3500	0.3158	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1195	0.0136	0.0386	0.0318	0.0000	0.3685	0.5482	0.0000
A9	0.0000	0.2500	0.2105	0.8958	1.0000	1.0000	1.0000	0.1000	0.0333	0.0052	0.0797	0.0170	0.0320	0.0798	1.0000	0.1180	0.4668
A11	0.4286	0.3500	0.3158	0.0538	0.6667	1.0000	1.0000	0.1500	0.0000	0.0156	0.1195	0.0255	0.0370	0.0770	1.0000	0.5813	0.5369
A1	1.0000	0.1000	0.2105	0.0000	0.0000	0.3974	0.0000	0.0000	0.0000	0.0052	0.1195	0.0085	0.0738	0.0822	0.4828	0.1735	0.3951
A8	0.0000	0.2000	0.2105	0.1367	0.0000	0.0000	0.0000	0.2000	0.0500	0.0156	0.1992	0.0068	0.1199	0.2040	0.5821	0.0000	0.5482
A15	0.0000	0.1000	0.0526	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A30	0.0000	0.0000	0.0000	0.1367	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A16	0.0000	0.2000	0.4211	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0797	0.0136	0.0174	0.0466	0.6217	0.0000	0.3951
A18	1.0000	0.1000	0.0526	0.1367	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A32	0.0000	0.2500	0.2105	0.0000	0.0000	0.0000	0.0000	0.0000	0.0100	0.0000	0.0598	0.0025	0.0139	0.0466	0.1689	0.0035	0.2756
⋮																	⋮
A454	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A141	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A74	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A411	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A371	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A568	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A416	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A456	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A610	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A609	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Zakat Recipient Data in Kedah for Objective Weight – Padang Terap District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A994	1.0000	0.2000	0.1579	0.0000	0.0000	1.0000	0.4990	0.6000	0.0333	0.0312	0.3386	0.0170	0.0400	0.0524	0.5862	0.5996	0.4449
A1310	1.0000	0.5000	0.4737	0.2740	1.0000	0.3974	0.0000	0.2500	0.0667	0.0312	0.1594	0.0340	0.0344	0.1288	0.4536	0.4146	0.5388
A1016	1.0000	0.4000	0.3684	0.2740	1.0000	0.3974	0.4990	0.0000	0.0000	0.0000	0.0797	0.0000	0.0246	0.0000	0.4932	0.3685	0.2917
A821	1.0000	0.5000	0.4737	0.1367	1.0000	0.3974	0.0000	0.2600	0.0167	0.0052	0.3586	0.0663	0.0344	0.0000	0.1689	0.4376	0.3951
A1455	1.0000	0.3000	0.3158	0.1367	1.0000	0.3974	0.4990	0.0000	0.0000	0.0000	0.0000	0.0000	0.0656	0.0000	0.4536	0.3685	0.4194
A1269	1.0000	0.5000	0.4737	0.1367	1.0000	0.3974	0.0000	0.1500	0.0667	0.0052	0.1992	0.0272	0.0393	0.1051	0.4536	0.3858	0.2756
A288	1.0000	0.2500	0.2105	0.2740	0.0000	1.0000	0.4990	0.1000	0.0167	0.0052	0.1394	0.0170	0.0459	0.0467	0.6409	0.3743	0.5482
A1140	1.0000	0.3000	0.2632	0.1367	1.0000	0.3974	0.0000	0.2000	0.0333	0.0104	0.1195	0.0170	0.0542	0.0130	0.5821	0.1988	0.6920
A1204	1.0000	0.3000	0.2632	0.1367	1.0000	0.3974	0.0000	0.2550	0.0200	0.0000	0.1992	0.0051	0.0369	0.0000	0.5821	0.3685	0.3951
A1542	1.0000	0.3500	0.3158	0.1367	1.0000	0.3974	0.0000	0.1800	0.0000	0.0104	0.1912	0.0085	0.0408	0.0202	0.5821	0.3915	0.3951
⋮																	⋮
A981	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1301	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1413	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1600	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1607	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1680	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1706	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1726	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1750	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Zakat Recipient Data in Kedah for Objective Weight – Pendang District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A1872	1.0000	0.3000	0.3158	0.1367	0.0000	0.3974	0.4990	0.0000	0.0000	0.0000	0.5976	0.0170	0.0820	0.0806	0.6352	0.5881	0.8452
A1040	1.0000	0.2000	0.3158	0.0000	1.0000	0.3974	0.5010	0.0000	0.0000	0.0208	0.1992	0.0510	0.0246	0.0000	0.5950	0.1642	0.3951
A2427	1.0000	0.3000	0.2632	0.1367	1.0000	0.6026	0.0000	0.0000	0.0000	0.0000	0.1594	0.0255	0.0410	0.0000	0.4536	0.5996	0.3951
A1858	1.0000	0.5000	0.4737	0.4107	1.0000	0.3974	0.0000	0.0000	0.0000	0.0000	0.0000	0.0153	0.0320	0.0586	0.4536	0.3685	0.3951
A1472	1.0000	0.3000	0.2632	0.0000	1.0000	0.3974	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0410	0.0000	0.8715	0.3685	0.4449
A1595	1.0000	0.3500	0.3158	0.4107	0.0000	0.3974	0.5010	0.0750	0.0000	0.0052	0.0797	0.0221	0.0281	0.0000	0.7276	0.4030	0.5725
A2296	1.0000	0.4000	0.3684	0.1367	1.0000	0.3974	0.0000	0.0500	0.0000	0.0000	0.1594	0.0340	0.0184	0.0000	0.4536	0.3800	0.2756
A1582	1.0000	0.3500	0.3158	0.1367	1.0000	0.3974	0.0000	0.0000	0.0000	0.0000	0.1992	0.0000	0.0562	0.0645	0.4536	0.3685	0.2756
A2151	1.0000	0.3000	0.3158	0.1367	1.0000	0.3974	0.0000	0.2500	0.0000	0.0000	0.0000	0.0000	0.0451	0.0000	0.5976	0.1642	0.2917
A901	1.0000	0.2000	0.1579	0.1367	1.0000	0.3974	0.0000	0.0000	0.0000	0.0000	0.1594	0.0000	0.0221	0.0000	0.4536	0.3685	0.3951
⋮																	⋮
A2670	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2671	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2694	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2703	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2704	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2709	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2710	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2713	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2715	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2716	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Zakat Recipient Data in Kedah for Objective Weight – Pokok Sena District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A712	1.0000	0.4000	0.3684	0.2740	1.0000	0.3974	0.0000	0.4000	0.0000	0.0052	0.1992	0.0102	0.0738	0.1681	0.7147	0.4030	0.3951
A742	1.0000	0.3500	0.5263	0.1367	1.0000	0.3974	0.4990	0.1350	0.0000	0.0052	0.0598	0.0918	0.0316	0.0183	0.5046	0.4261	0.4288
A869	1.0000	0.4000	0.3684	0.4107	1.0000	0.3974	0.0000	0.2000	0.0167	0.0000	0.1992	0.0102	0.0469	0.0563	0.4132	0.5996	0.3951
A947	1.0000	0.4000	0.3684	0.0000	1.0000	0.3974	0.0000	0.3000	0.0000	0.0000	0.1594	0.0170	0.1322	0.4953	0.1689	0.3915	0.4194
A1007	1.0000	0.3500	0.3158	0.0000	1.0000	0.3974	0.0000	0.1750	0.0333	0.0364	0.3984	0.0646	0.0676	0.0260	0.5821	0.4299	0.2756
A621	1.0000	0.3000	0.2632	0.1367	1.0000	0.3974	0.0000	0.2500	0.0667	0.0208	0.1195	0.0170	0.0779	0.0905	0.5821	0.3800	0.3951
A355	1.0000	0.3000	0.3684	0.4107	0.0000	1.0000	0.4990	0.0900	0.0467	0.0062	0.2191	0.0221	0.0545	0.0798	0.7276	0.1896	0.3951
A745	1.0000	0.5000	0.4737	0.1367	1.0000	0.3974	0.0000	0.1500	0.0500	0.0104	0.2590	0.0255	0.0393	0.1137	0.4536	0.0230	0.7014
A711	1.0000	0.4500	0.4211	0.1367	1.0000	0.3974	0.0000	0.3500	0.0500	0.0052	0.2390	0.0136	0.0423	0.0439	0.4536	0.1758	0.3951
A905	1.0000	0.4000	0.3684	0.4107	1.0000	0.3974	0.0000	0.2400	0.0000	0.0000	0.1992	0.0765	0.0502	0.0707	0.4536	0.2273	0.2756
⋮																	⋮
A631	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A696	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A702	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A814	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A850	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1062	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1072	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1075	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1076	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Zakat Recipient Data in Kedah for Objective Weight - Sik District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A1625	1.0000	0.3000	0.2632	0.1367	1.0000	0.3974	0.0000	0.3805	0.0773	0.0000	0.1594	0.0110	0.0492	0.0000	0.5821	0.3720	0.5725
A2260	1.0000	0.2500	0.2105	0.4107	1.0000	0.3974	0.0000	0.0750	0.0000	0.0052	0.1992	0.0102	0.1082	0.1052	0.5950	0.6226	0.2756
A1657	1.0000	0.3000	0.2632	0.4107	1.0000	0.3974	0.0000	0.0000	0.0167	0.0021	0.1394	0.0063	0.0501	0.0000	0.5821	0.3800	0.5482
A1553	1.0000	0.3500	0.3158	0.1367	1.0000	0.3974	0.0000	0.1500	0.0667	0.0000	0.1992	0.0170	0.0527	0.0000	0.5950	0.2369	0.3951
A1422	1.0000	0.5000	0.4737	0.1367	0.0000	0.3974	0.4990	0.2000	0.0333	0.0104	0.3187	0.0136	0.0811	0.0832	0.5976	0.3915	0.4194
A2145	1.0000	0.2500	0.2105	0.4107	1.0000	0.3974	0.0000	0.0750	0.0333	0.0052	0.1195	0.0068	0.0566	0.0735	0.4536	0.3858	0.3160
A1604	1.0000	0.3500	0.3158	0.1367	1.0000	0.3974	0.0000	0.0750	0.0000	0.0000	0.0000	0.1189	0.0351	0.0000	0.4957	0.3685	0.3951
A1541	1.0000	0.4000	0.3684	0.4107	1.0000	0.3974	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0246	0.0000	0.4536	0.3685	0.3951
A1192	1.0000	0.2000	0.1579	0.1367	1.0000	0.3974	0.0000	0.0000	0.0667	0.0000	0.1195	0.0255	0.0848	0.0000	0.5950	0.3835	0.3951
A798	1.0000	0.5000	0.4737	0.1367	1.0000	0.0000	0.0000	0.1500	0.0000	0.0104	0.1195	0.0255	0.0246	0.0000	0.4261	0.3800	0.5482
⋮																	⋮
A2317	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2326	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2329	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2332	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2336	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2338	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2339	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A2341	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Zakat Recipient Data in Kedah for Objective Weight - Yan District.

Applicant	Marital status	Number of households	Number of dependents	Health level	Employment status	communication tools	Electronic tools	Education	Clothing	Medication	Food and Drinks	Protection	Per capita income	Other source of income	basic home convenience tools	Transportation	Type of property
A893	1.0000	0.4000	0.3684	0.4107	0.0000	0.3974	0.4990	0.0000	0.0000	0.0000	0.0000	0.1359	0.0738	0.0967	0.4536	0.3685	0.3160
A1006	0.0000	0.2500	0.2105	0.1367	1.0000	0.3974	0.0000	0.0000	0.0000	0.0000	0.0000	0.1706	0.0467	0.0000	0.4536	0.5881	0.3951
A836	1.0000	0.4000	0.3684	0.1367	0.0000	0.3974	0.0000	0.3500	0.0000	0.0000	0.3586	0.0340	0.0369	0.0000	0.4536	0.3915	0.2917
A725	1.0000	0.4000	0.4211	0.4107	0.0000	0.3974	0.0000	0.1250	0.0000	0.0000	0.1992	0.0170	0.0492	0.0175	0.4536	0.3685	0.3951
A548	1.0000	0.3000	0.2632	0.4107	0.0000	0.3974	0.0000	0.0500	0.0000	0.0000	0.1594	0.0170	0.0246	0.0550	0.4536	0.3685	0.4194
A897	0.0000	0.1500	0.1053	0.0000	1.0000	0.3974	0.0000	0.1000	0.0000	0.0052	0.1195	0.0061	0.0408	0.0379	0.4536	0.3800	0.2756
A772	1.0000	0.3500	0.3158	0.4107	0.0000	0.3974	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0422	0.0484	0.5976	0.3685	0.2917
A982	1.0000	0.3000	0.2632	0.4107	0.0000	0.3974	0.0000	0.0000	0.0000	0.0000	0.1793	0.0170	0.0328	0.0000	0.4536	0.3800	0.2756
A742	1.0000	0.4500	0.4211	0.1367	0.0000	0.3974	0.0000	0.2000	0.0000	0.0000	0.1992	0.0204	0.0328	0.0000	0.3543	0.1758	0.2917
A979	0.0000	0.2500	0.2105	0.1367	1.0000	0.3974	0.0000	0.0000	0.0000	0.0000	0.1394	0.0119	0.0295	0.0000	0.4536	0.0000	0.2756
⋮																	⋮
A868	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A871	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A883	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A906	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A946	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A952	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1045	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
A1057	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

APPENDIX B

Data for Subjective Weight

Expert	Health level	Marital Status	Employment Status	Number of dependent	Number of households	Electronic tools	Basic home convenience tools	Communication tools	Transportation	Type of property	Per capita income	Other source of income	Protection	Food & drinks	Clothing	Education	Medication
1	0.0600	0.0360	0.1080	0.0120	0.0120	0.1080	0.0540	0.0360	0.0216	0.1080	0.0540	0.1080	0.0154	0.0154	0.1080	0.1080	0.0360
2	0.0329	0.0144	0.1297	0.0288	0.0329	0.0768	0.1153	0.1153	0.0461	0.0329	0.0768	0.0576	0.0461	0.0384	0.0768	0.0329	0.0461
3	0.0546	0.0682	0.0546	0.0390	0.0390	0.0273	0.0546	0.0682	0.0546	0.0390	0.1910	0.0546	0.0390	0.0546	0.0546	0.0682	0.0390
4	0.0504	0.0705	0.0392	0.0392	0.0392	0.0504	0.0392	0.0504	0.0504	0.0392	0.2441	0.0504	0.0504	0.0392	0.0705	0.0271	0.0504
5	0.0877	0.0351	0.0292	0.0584	0.0195	0.0877	0.0584	0.0877	0.0438	0.0438	0.0250	0.0438	0.0877	0.0584	0.0877	0.0877	0.0584
6	0.0323	0.0388	0.0647	0.0277	0.0323	0.0388	0.0647	0.0416	0.0970	0.0485	0.0388	0.0970	0.0388	0.1386	0.0970	0.0647	0.0388
7	0.1089	0.0847	0.0565	0.0282	0.0282	0.0847	0.0847	0.0847	0.0847	0.0847	0.0847	0.0423	0.0423	0.0242	0.0242	0.0282	0.0242
8	0.0412	0.0550	0.0471	0.0412	0.0412	0.0183	0.0550	0.0550	0.0550	0.0550	0.2198	0.0412	0.0659	0.0471	0.0550	0.0659	0.0412
9	0.0468	0.0780	0.0468	0.0468	0.0468	0.0318	0.0780	0.0780	0.0780	0.0468	0.1648	0.0468	0.0468	0.0260	0.0334	0.0780	0.0260
10	0.0348	0.0447	0.0521	0.0447	0.0626	0.0626	0.0782	0.0782	0.0626	0.0521	0.2085	0.0626	0.0348	0.0348	0.0348	0.0174	0.0348
11	0.0301	0.0703	0.0703	0.0703	0.0264	0.1055	0.1055	0.0703	0.1055	0.0527	0.0703	0.0703	0.0301	0.0264	0.0301	0.0422	0.0234
12	0.0537	0.0671	0.0537	0.0298	0.0298	0.0895	0.1342	0.0158	0.0447	0.0384	0.1737	0.0298	0.0671	0.0447	0.0447	0.0447	0.0384
13	0.0364	0.0655	0.0655	0.0364	0.0364	0.1091	0.0546	0.0818	0.0818	0.0818	0.0818	0.0468	0.0468	0.0468	0.0468	0.0409	0.0409
14	0.1775	0.0414	0.0497	0.0414	0.0497	0.0621	0.0621	0.0621	0.0414	0.0414	0.0497	0.0621	0.0497	0.0414	0.0497	0.0355	0.0828
15	0.2027	0.0946	0.0473	0.0473	0.0473	0.0473	0.0405	0.0473	0.0473	0.0473	0.0473	0.0473	0.0473	0.0473	0.0473	0.0473	0.0473
16	0.0371	0.0371	0.0371	0.1485	0.0371	0.1299	0.0866	0.0866	0.0866	0.0371	0.0325	0.0371	0.0371	0.0371	0.0433	0.0520	0.0371
17	0.1019	0.1019	0.1019	0.0227	0.0227	0.0680	0.1019	0.0510	0.1019	0.0340	0.0408	0.0408	0.1019	0.0227	0.0227	0.0408	0.0227
18	0.0512	0.0641	0.0854	0.0285	0.0512	0.1281	0.0512	0.0427	0.0854	0.0641	0.0512	0.0320	0.0285	0.1281	0.0285	0.0512	0.0285
19	0.0315	0.0709	0.0567	0.0315	0.0315	0.0945	0.0709	0.0385	0.0567	0.0473	0.1996	0.0354	0.0405	0.0405	0.0405	0.0567	0.0567
20	0.0299	0.0349	0.1047	0.0299	0.0233	0.0100	0.0698	0.0698	0.0523	0.0523	0.1296	0.1047	0.1047	0.0262	0.0299	0.1047	0.0233
21	0.2169	0.0562	0.0375	0.0562	0.0562	0.0241	0.0562	0.0843	0.0562	0.0375	0.0375	0.0375	0.0562	0.0375	0.0562	0.0562	0.0375
22	0.0360	0.0841	0.0505	0.0280	0.0360	0.1261	0.0505	0.0841	0.0841	0.0360	0.1460	0.0360	0.0631	0.0420	0.0420	0.0133	0.0420
23	0.0360	0.0504	0.0360	0.1724	0.0280	0.0133	0.0315	0.0315	0.0630	0.1260	0.0840	0.1260	0.0504	0.0315	0.0360	0.0420	0.0420
24	0.0347	0.0270	0.0347	0.1663	0.0304	0.1215	0.0608	0.1215	0.0486	0.0347	0.0405	0.0486	0.0347	0.0270	0.0347	0.0128	0.1215
25	0.0326	0.0978	0.0489	0.0279	0.1245	0.0178	0.0978	0.0978	0.0978	0.0978	0.0978	0.0245	0.0391	0.0245	0.0245	0.0245	0.0245
26	0.0354	0.0472	0.0315	0.1789	0.0354	0.0149	0.0944	0.0944	0.0405	0.0405	0.0315	0.0315	0.0354	0.0405	0.0708	0.1417	0.0354
27	0.0364	0.0410	0.0547	0.2139	0.0547	0.0656	0.0656	0.0656	0.0656	0.0143	0.0410	0.0656	0.0364	0.0364	0.0656	0.0410	0.0364
28	0.0397	0.0447	0.0511	0.2445	0.0511	0.0596	0.0596	0.0447	0.0511	0.0188	0.0511	0.0596	0.0447	0.0447	0.0511	0.0447	0.0397
29	0.0472	0.0539	0.0472	0.0472	0.0539	0.0472	0.0539	0.0472	0.0472	0.0629	0.0472	0.0472	0.0420	0.2567	0.0420	0.0151	0.0420
30	0.0423	0.0705	0.0302	0.0302	0.0423	0.1057	0.0705	0.0705	0.0705	0.0529	0.1208	0.0423	0.0705	0.0423	0.0705	0.0151	0.0529
31	0.0205	0.0924	0.0369	0.0205	0.0616	0.0924	0.0616	0.0924	0.0924	0.0462	0.1300	0.0616	0.0924	0.0205	0.0205	0.0376	0.0205
32	0.0582	0.0582	0.0582	0.0416	0.0416	0.0323	0.0582	0.0727	0.0727	0.0582	0.1939	0.0416	0.0582	0.0323	0.0416	0.0485	0.0323
33	0.0340	0.1362	0.0303	0.0303	0.0303	0.1362	0.0340	0.1362	0.0303	0.0303	0.1815	0.0303	0.0340	0.0303	0.0113	0.0545	0.0303
34	0.0236	0.0825	0.0825	0.1161	0.0206	0.0825	0.0825	0.0825	0.0825	0.1161	0.0825	0.0275	0.0206	0.0183	0.0275	0.0336	0.0183
35	0.0283	0.0849	0.0364	0.1456	0.0364	0.0849	0.0182	0.1274	0.0849	0.0364	0.0510	0.0637	0.0319	0.0283	0.0283	0.0849	0.0283
36	0.0473	0.0662	0.0552	0.1892	0.0368	0.0552	0.0552	0.0552	0.0473	0.0414	0.0368	0.0368	0.0552	0.0473	0.0828	0.0552	0.0368
37	0.0479	0.0479	0.0218	0.1525	0.0479	0.0799	0.0799	0.0599	0.0599	0.0479	0.0479	0.0479	0.0479	0.0300	0.0342	0.1198	0.0266
38	0.0467	0.0584	0.0389	0.0389	0.0467	0.0779	0.0317	0.0779	0.0779	0.0779	0.1644	0.0584	0.0334	0.0334	0.0334	0.0779	0.0260

Expert	Health level	Marital Status	Employment Status	Number of dependent	Number of households	Electronic tools	Basic home convenience tools	Communication tools	Transportation	Type of property	Per capita income	Other source of income	Protection	Food & drinks	Clothing	Education	Medication
39	0.0306	0.0349	0.0611	0.1572	0.0349	0.1223	0.1223	0.1223	0.0349	0.0349	0.0306	0.0349	0.0349	0.0349	0.0611	0.0175	0.0306
40	0.0284	0.0379	0.0134	0.1470	0.0455	0.1136	0.1136	0.1136	0.0758	0.0455	0.0455	0.0455	0.0455	0.0284	0.0379	0.0379	0.0253
41	0.0652	0.0362	0.0362	0.2216	0.0362	0.0652	0.0815	0.0543	0.0362	0.0466	0.1086	0.0543	0.0362	0.0362	0.0362	0.0130	0.0362
42	0.0411	0.0470	0.0411	0.0366	0.0411	0.0183	0.0548	0.0548	0.0822	0.0548	0.2010	0.1097	0.0470	0.0411	0.0411	0.0411	0.0470
43	0.0423	0.0563	0.0483	0.0483	0.0483	0.0563	0.0483	0.0563	0.0483	0.0563	0.0483	0.0483	0.0161	0.2254	0.0483	0.0563	0.0483
44	0.0323	0.0484	0.0484	0.0323	0.0363	0.1452	0.0323	0.0968	0.0726	0.0726	0.1613	0.0323	0.0323	0.0323	0.0726	0.0161	0.0363

APPENDIX C

The Index of Zakat Recipient Based on Objective Weight - Baling District.

No	Applicant	Index	Rank
1	A1475	0.3379	1
2	A1407	0.3323	2
3	A1815	0.3197	3
4	A1126	0.3194	4
5	A1543	0.3156	5
6	A1688	0.3092	6
7	A678	0.3081	7
8	A1094	0.3076	8
9	A971	0.3070	9
10	A1299	0.3068	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1924	A538	0.0000	1914
1925	A566	0.0000	191
1926	A592	0.0000	1914
1927	A759	0.0000	1914
1928	A831	0.0000	1914
1929	A1060	0.0000	1914
1930	A1114	0.0000	1914
1931	A1554	0.0000	1914
1932	A1729	0.0000	1914
1933	A1933	0.0000	1914

The Index of Zakat Recipient Based on Objective Weight – Bandar Baru District.

No	Applicant	Index	Rank
1	A551	0.3239	1
2	A577	0.3148	2
3	A387	0.3145	3
4	A601	0.3116	4
5	A543	0.3111	5
6	A638	0.3014	6
7	A661	0.3012	7
8	A560	0.2944	8
9	A411	0.2839	9
10	A562	0.2777	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
698	A447	0.0000	668
699	A499	0.0000	668
700	A545	0.0000	668
701	A603	0.0000	668
702	A621	0.0000	668
703	A650	0.0000	668
704	A656	0.0000	668
705	A662	0.0000	668
706	A663	0.0000	668
707	A707	0.0000	668

The Index of Zakat Recipient Based on Objective Weight – Kota Setar District.

No	Applicant	Index	Rank
1	A3236	0.4020	1
2	A5386	0.3606	2
3	A5140	0.3529	3
4	A4248	0.3427	4
5	A4804	0.3404	5
6	A3801	0.3340	6
7	A4558	0.3314	7
8	A4456	0.3280	8
9	A3718	0.3185	9
10	A5784	0.3147	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
5916	A5631	0.0000	5810
5917	A5667	0.0000	5810
5918	A5688	0.0000	5810
5919	A5724	0.0000	5810
5920	A5749	0.0000	5810
5921	A5835	0.0000	5810
5922	A5842	0.0000	5810
5923	A5890	0.0000	5810
5924	A5893	0.0000	5810
5925	A5906	0.0000	5810

The Index of Zakat Recipient Based on Objective Weight – Kuala Muda District.

No	Applicant	Index	Rank
1	A1391	0.3670	1
2	A1701	0.3482	2
3	A2576	0.3448	3
4	A1737	0.3216	4
5	A1703	0.3190	5
6	A1360	0.3147	6
7	A1738	0.3137	7
8	A1061	0.3128	8
9	A998	0.3113	9
10	A1889	0.3044	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
2948	A2745	0.0000	2885
2949	A2786	0.0000	2885
2950	A2795	0.0000	2885
2951	A2802	0.0000	2885
2952	A2841	0.0000	2885
2953	A2842	0.0000	2885
2954	A2864	0.0000	2885
2955	A2935	0.0000	2885
2956	A2941	0.0000	2885
2957	A2942	0.0000	2885

The Index of Zakat Recipient Based on Objective Weight – Kubang Pasu District.

No	Applicant	Index	Rank
1	A2210	0.3797	1
2	A1807	0.3508	2
3	A2113	0.3487	3
4	A1393	0.3251	4
5	A1907	0.3188	5
6	A2392	0.3109	6
7	A1358	0.3091	7
8	A2603	0.3087	8
9	A2870	0.3067	9
10	A2245	0.3043	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
2908	A2636	0.0000	2819
2909	A2693	0.0000	2819
2910	A2714	0.0000	2819
2911	A2758	0.0000	2819
2912	A2771	0.0000	2819
2913	A2778	0.0000	2819
2914	A2894	0.0000	2819
2915	A2901	0.0000	2819
2916	A2906	0.0000	2819
2917	A2917	0.0000	2819

The Index of Zakat Recipient Based on Objective Weight – Kulim District.

No	Applicant	Index	Rank
1	A818	0.4064	1
2	A1001	0.3954	2
3	A903	0.3952	3
4	A767	0.3903	4
5	A1672	0.3723	5
6	A1592	0.3427	6
7	A1606	0.3401	7
8	A955	0.3365	8
9	A883	0.3312	9
10	A1094	0.3309	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1674	A755	0.0000	1664
1675	A797	0.0000	1664
1676	A995	0.0000	1664
1677	A1008	0.0000	1664
1678	A1052	0.0000	1664
1679	A1184	0.0000	1664
1680	A1525	0.0000	1664
1681	A1646	0.0000	1664
1682	A1647	0.0000	1664
1683	A1658	0.0000	1664

The Index of Zakat Recipient Based on Objective Weight – Padang Terap District.

No	Applicant	Index	Rank
1	A994	0.3194	1
2	A1310	0.3138	2
3	A1016	0.2953	3
4	A821	0.2879	4
5	A1455	0.2867	5
6	A1269	0.2839	6
7	A288	0.2797	7
8	A1140	0.2793	8
9	A1204	0.2784	9
10	A1542	0.2782	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1747	A981	0.0000	1726
1748	A1003	0.0000	1726
1749	A1301	0.0000	1726
1750	A1413	0.0000	1726
1751	A1600	0.0000	1726
1752	A1607	0.0000	1726
1753	A1680	0.0000	1726
1754	A1706	0.0000	1726
1755	A1726	0.0000	1726
1756	A1750	0.0000	1726

The Index of Zakat Recipient Based on Objective Weight – Pendang District.

No	Applicant	Index	Rank
1	A1872	0.2931	1
2	A1040	0.2848	2
3	A2427	0.2773	3
4	A1858	0.2703	4
5	A1472	0.2583	5
6	A1595	0.2554	6
7	A2296	0.2553	7
8	A1582	0.2541	8
9	A2151	0.2502	9
10	A901	0.2423	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
2714	A2670	0.0000	2482
2715	A2671	0.0000	2482
2716	A2694	0.0000	2482
2717	A2703	0.0000	2482
2718	A2704	0.0000	2482
2719	A2709	0.0000	2482
2720	A2710	0.0000	2482
2721	A2713	0.0000	2482
2722	A2715	0.0000	2482
2723	A2716	0.0000	2482

The Index of Zakat Recipient Based on Objective Weight – Pokok Sena District.

No	Applicant	Index	Rank
1	A712	0.3219	1
2	A742	0.3199	2
3	A869	0.3030	3
4	A947	0.2960	4
5	A1007	0.2895	5
6	A621	0.2879	6
7	A355	0.2870	7
8	A745	0.2869	8
9	A711	0.2851	9
10	A905	0.2835	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1072	A631	0.0000	1064
1073	A696	0.0000	1064
1074	A702	0.0000	1064
1075	A814	0.0000	1064
1076	A850	0.0000	1064
1077	A1004	0.0000	1064
1078	A1062	0.0000	1064
1079	A1072	0.0000	1064
1080	A1075	0.0000	1064
1081	A1076	0.0000	1064

The Index of Zakat Recipient Based on Objective Weight – Sik District.

No	Applicant	Index	Rank
1	A1625	0.2997	1
2	A2260	0.2948	2
3	A1657	0.2788	3
4	A1553	0.2721	4
5	A1422	0.2702	5
6	A2145	0.2680	6
7	A1604	0.2590	7
8	A1541	0.2589	8
9	A1192	0.2585	9
10	A798	0.2569	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
2332	A2317	0.0000	2242
2333	A2326	0.0000	2242
2334	A2329	0.0000	2242
2335	A2332	0.0000	2242
2336	A2333	0.0000	2242
2337	A2336	0.0000	2242
2338	A2337	0.0000	2242
2339	A2338	0.0000	2242
2340	A2339	0.0000	2242
2341	A2341	0.0000	2242

The Index of Zakat Recipient Based on Objective Weight – Yan District.

No	Applicant	Index	Rank
1	A893	0.2351	1
2	A1006	0.2156	2
3	A836	0.2117	3
4	A725	0.2055	4
5	A548	0.1918	5
6	A897	0.1895	6
7	A772	0.1827	7
8	A982	0.1799	8
9	A742	0.1759	9
10	A979	0.1704	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1048	A868	0.0000	994
1049	A871	0.0000	994
1050	A883	0.0000	994
1051	A906	0.0000	994
1052	A946	0.0000	994
1053	A952	0.0000	994
1054	A1027	0.0000	994
1055	A1039	0.0000	994
1056	A1045	0.0000	994
1057	A1057	0.0000	994

APPENDIX D

The Index of Zakat Recipient Based on Subjective Weight - Baling District.

No	Applicant	Index	Rank
A938	A3	0.3499	1
A678	A7	0.3427	2
A1126	A142	0.3299	3
A1234	A12	0.3276	4
A1407	A29	0.3269	5
A1475	A14	0.3220	6
A1543	A418	0.3177	7
A1688	A40	0.3148	8
A935	A153	0.3131	9
A1415	A250	0.3079	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
A538	A1635	0.0000	1914
A566	A1930	0.0000	1914
A592	A1928	0.0000	1914
A759	A1236	0.0000	1914
A831	A743	0.0000	1914
A1060	A1845	0.0000	1914
A1114	A986	0.0000	1914
A1554	A1333	0.0000	1914
A1729	A1636	0.0000	1914
A1933	A1933	0.0000	1914

The Index of Zakat Recipient Based on Subjective Weight – Bandar Baru District.

No	Applicant	Index	Rank
1	A551	0.3239	1
2	A577	0.3148	2
3	A387	0.3145	3
4	A601	0.3116	4
5	A543	0.3111	5
6	A638	0.3014	6
7	A661	0.3012	7
8	A560	0.2944	8
9	A411	0.2839	9
10	A562	0.2777	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
698	A447	0.0000	668
699	A499	0.0000	668
700	A545	0.0000	668
701	A603	0.0000	668
702	A621	0.0000	668
703	A650	0.0000	668
704	A656	0.0000	668
705	A662	0.0000	668
706	A663	0.0000	668
707	A707	0.0000	668

The Index of Zakat Recipient Based on Subjective Weight – Kota Setar District.

No	Applicant	Index	Rank
1	A4248	0.3981	1
2	A3236	0.3852	2
3	A5386	0.3513	3
4	A4804	0.3388	4
5	A5681	0.3384	5
6	A4822	0.3281	6
7	A3801	0.3232	7
8	A5140	0.3222	8
9	A4931	0.3217	9
10	A4456	0.3212	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
5924	A5631	0.0000	5810
5925	A5667	0.0000	5810
5926	A5688	0.0000	5810
5927	A5724	0.0000	5810
5928	A5749	0.0000	5810
5929	A5835	0.0000	5810
5930	A5842	0.0000	5810
5931	A5890	0.0000	5810
5932	A5893	0.0000	5810
5933	A5906	0.0000	5810

The Index of Zakat Recipient Based on Subjective Weight – Kuala Muda District.

No	Applicant	Index	Rank
1	A1391	0.4005	1
2	A1701	0.3435	2
3	A2576	0.3427	3
4	A1061	0.3346	4
5	A1737	0.3274	5
6	A2291	0.3136	6
7	A998	0.3119	7
8	A1360	0.3112	8
9	A1703	0.3086	9
10	A2314	0.3061	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
2948	A2745	0.0000	2885
2949	A2786	0.0000	2885
2950	A2795	0.0000	2885
2951	A2802	0.0000	2885
2952	A2841	0.0000	2885
2953	A2842	0.0000	2885
2954	A2864	0.0000	2885
2955	A2935	0.0000	2885
2956	A2941	0.0000	2885
2957	A2942	0.0000	2885

The Index of Zakat Recipient Based on Subjective Weight – Kubang Pasu District.

No	Applicant	Index	Rank
1	A1807	0.3677	1
2	A2210	0.3459	2
3	A2113	0.3358	3
4	A1907	0.3255	4
5	A2245	0.3178	5
6	A2300	0.3101	6
7	A1527	0.3041	7
8	A2603	0.2995	8
9	A2814	0.2988	9
10	A1543	0.2986	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
2908	A2636	0.0000	2819
2909	A2693	0.0000	2819
2910	A2714	0.0000	2819
2911	A2758	0.0000	2819
2912	A2771	0.0000	2819
2913	A2778	0.0000	2819
2914	A2894	0.0000	2819
2915	A2901	0.0000	2819
2916	A2906	0.0000	2819
2917	A2917	0.0000	2819

The Index of Zakat Recipient Based on Subjective Weight – Kulim District.

No	Applicant	Index	Rank
1	A818	0.3917	1
2	A767	0.3883	2
3	A903	0.3755	3
4	A1001	0.3687	4
5	A1442	0.3486	5
6	A1043	0.3482	6
7	A1592	0.3434	7
8	A955	0.3412	8
9	A1672	0.3370	9
10	A1504	0.3349	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1674	A755	0.0000	1664
1675	A797	0.0000	1664
1676	A995	0.0000	1664
1677	A1008	0.0000	1664
1678	A1052	0.0000	1664
1679	A1184	0.0000	1664
1680	A1525	0.0000	1664
1681	A1646	0.0000	1664
1682	A1647	0.0000	1664
1683	A1658	0.0000	1664

The Index of Zakat Recipient Based on Subjective Weight – Padang Terap District.

No	Applicant	Index	Rank
1	A994	0.3428	1
2	A1310	0.3132	2
3	A288	0.3065	3
4	A1175	0.2986	4
5	A821	0.2958	5
6	A1269	0.2849	6
7	A1016	0.2847	7
8	A1114	0.2834	8
9	A696	0.2807	9
10	A1211	0.2782	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1747	A981	0.0000	1726
1748	A1003	0.0000	1726
1749	A1301	0.0000	1726
1750	A1413	0.0000	1726
1751	A1600	0.0000	1726
1752	A1607	0.0000	1726
1753	A1680	0.0000	1726
1754	A1706	0.0000	1726
1755	A1726	0.0000	1726
1756	A1750	0.0000	1726

The Index of Zakat Recipient Based on Subjective Weight – Pendang District.

No	Applicant	Index	Rank
1	A1872	0.3229	1
2	A1595	0.2799	2
3	A1858	0.2713	3
4	A2427	0.2673	4
5	A1040	0.2632	5
6	A2296	0.2515	6
7	A1582	0.2486	7
8	A2344	0.2465	8
9	A1879	0.2439	9
10	A1724	0.2414	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
2714	A2670	0.0000	2482
2715	A2671	0.0000	2482
2716	A2694	0.0000	2482
2717	A2703	0.0000	2482
2718	A2704	0.0000	2482
2719	A2709	0.0000	2482
2720	A2710	0.0000	2482
2721	A2713	0.0000	2482
2722	A2715	0.0000	2482
2723	A2716	0.0000	2482

The Index of Zakat Recipient Based on Subjective Weight – Pokok Sena District.

No	Applicant	Index	Rank
1	A623	0.3445	1
2	A355	0.3288	2
3	A712	0.3196	3
4	A869	0.3051	4
5	A795	0.3046	5
6	A742	0.3024	6
7	A905	0.2900	7
8	A773	0.2900	8
9	A745	0.2888	9
10	A881	0.2873	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1072	A631	0.0000	1064
1073	A696	0.0000	1064
1074	A702	0.0000	1064
1075	A814	0.0000	1064
1076	A850	0.0000	1064
1077	A1004	0.0000	1064
1078	A1062	0.0000	1064
1079	A1072	0.0000	1064
1080	A1075	0.0000	1064
1081	A1076	0.0000	1064

The Index of Zakat Recipient Based on Subjective Weight – Sik District.

No	Applicant	Index	Rank
1	A1422	0.3046	1
2	A1523	0.3033	2
3	A2260	0.2883	3
4	A1625	0.2864	4
5	A1657	0.2734	5
6	A1553	0.2662	6
7	A2145	0.2614	7
8	A1460	0.2593	8
9	A1224	0.2580	9
10	A1541	0.2557	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
2332	A2317	0.0000	2242
2333	A2326	0.0000	2242
2334	A2329	0.0000	2242
2335	A2332	0.0000	2242
2336	A2333	0.0000	2242
2337	A2336	0.0000	2242
2338	A2337	0.0000	2242
2339	A2338	0.0000	2242
2340	A2339	0.0000	2242
2341	A2341	0.0000	2242

The Index of Zakat Recipient Based on Subjective Weight – Yan District.

No	Applicant	Index	Rank
1	A893	0.2600	1
2	A836	0.2546	2
3	A725	0.2497	3
4	A548	0.2276	4
5	A982	0.2186	5
6	A742	0.2172	6
7	A772	0.2154	7
8	A894	0.1981	8
9	A1006	0.1836	9
10	A605	0.1803	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1048	A868	0.0000	994
1049	A871	0.0000	994
1050	A883	0.0000	994
1051	A906	0.0000	994
1052	A946	0.0000	994
1053	A952	0.0000	994
1054	A1027	0.0000	994
1055	A1039	0.0000	994
1056	A1045	0.0000	994
1057	A1057	0.0000	994

APPENDIX E

The Index of Zakat Recipient Based on Aggregated Weight - Baling District.

No	Applicant	Index	Rank
1	A1475	0.3536	1
2	A1407	0.3448	2
3	A1126	0.3396	3
4	A1688	0.3356	4
5	A1234	0.3355	5
6	A1415	0.3274	6
7	A1627	0.3274	7
8	A971	0.3264	8
9	A1543	0.3259	9
10	A678	0.3240	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1924	A538	0.0000	1914
1925	A566	0.0000	1914
1926	A592	0.0000	1914
1927	A759	0.0000	1914
1928	A831	0.0000	1914
1929	A1060	0.0000	1914
1930	A1114	0.0000	1914
1931	A1554	0.0000	1914
1932	A1729	0.0000	1914
1933	A1933	0.0000	1914

The Index of Zakat Recipient Based on Aggregated Weight – Bandar Baru District.

No	Applicant	Index	Rank
1	A543	0.3496	1
2	A577	0.3381	2
3	A601	0.3346	3
4	A551	0.3289	4
5	A387	0.3276	5
6	A638	0.3194	6
7	A661	0.3194	7
8	A560	0.3103	8
9	A562	0.3030	9
10	A584	0.2966	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
698	A447	0.0000	668
699	A499	0.0000	668
700	A545	0.0000	668
701	A603	0.0000	668
702	A621	0.0000	668
703	A650	0.0000	668
704	A656	0.0000	668
705	A662	0.0000	668
706	A663	0.0000	668
707	A707	0.0000	668

The Index of Zakat Recipient Based on Aggregated Weight – Kota Setar District.

No	Applicant	Index	Rank
1	A3236	0.4185	1
2	A4248	0.4049	2
3	A5386	0.3757	3
4	A5140	0.3645	4
5	A4804	0.3560	5
6	A4558	0.3554	6
7	A5681	0.3544	7
8	A3718	0.3526	8
9	A3801	0.3406	9
10	A4456	0.3404	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
5924	A5631	0.0000	5810
5925	A5667	0.0000	5810
5926	A5688	0.0000	5810
5927	A5724	0.0000	5810
5928	A5749	0.0000	5810
5929	A5835	0.0000	5810
5930	A5842	0.0000	5810
5931	A5890	0.0000	5810
5932	A5893	0.0000	5810
5933	A5906	0.0000	5810

The Index of Zakat Recipient Based on Aggregated Weight – Kuala Muda District.

No	Applicant	Index	Rank
1	A1391	0.4022	1
2	A1701	0.3653	2
3	A1061	0.3491	3
4	A2576	0.3458	4
5	A1703	0.3413	5
6	A1360	0.3310	6
7	A2291	0.3293	7
8	A1738	0.3278	8
9	A998	0.3262	9
10	A1889	0.3255	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
2948	A2745	0.0000	2885
2949	A2786	0.0000	2885
2950	A2795	0.0000	2885
2951	A2802	0.0000	2885
2952	A2841	0.0000	2885
2953	A2842	0.0000	2885
2954	A2864	0.0000	2885
2955	A2935	0.0000	2885
2956	A2941	0.0000	2885
2957	A2942	0.0000	2885

The Index of Zakat Recipient Based on Aggregated Weight – Kubang Pasu District.

No	Applicant	Index	Rank
1	A2210	0.3850	1
2	A1807	0.3712	2
3	A2113	0.3493	3
4	A1907	0.3382	4
5	A2245	0.3313	5
6	A1393	0.3303	6
7	A2603	0.3269	7
8	A2392	0.3182	8
9	A1358	0.3161	9
10	A1673	0.3143	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
2908	A2636	0.0000	2819
2909	A2693	0.0000	2819
2910	A2714	0.0000	2819
2911	A2758	0.0000	2819
2912	A2771	0.0000	2819
2913	A2778	0.0000	2819
2914	A2894	0.0000	2819
2915	A2901	0.0000	2819
2916	A2906	0.0000	2819
2917	A2917	0.0000	2819

The Index of Zakat Recipient Based on Aggregated Weight – Kulim District.

No	Applicant	Index	Rank
1	A818	0.4160	1
2	A767	0.4117	2
3	A1001	0.3938	3
4	A903	0.3923	4
5	A1672	0.3650	5
6	A955	0.3637	6
7	A1442	0.3585	7
8	A1504	0.3582	8
9	A1592	0.3576	9
10	A1606	0.3509	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1674	A755	0.0000	1664
1675	A797	0.0000	1664
1676	A995	0.0000	1664
1677	A1008	0.0000	1664
1678	A1052	0.0000	1664
1679	A1184	0.0000	1664
1680	A1525	0.0000	1664
1681	A1646	0.0000	1664
1682	A1647	0.0000	1664
1683	A1658	0.0000	1664

The Index of Zakat Recipient Based on Aggregated Weight – Padang Terap District.

No	Applicant	Index	Rank
1	A994	0.3477	1
2	A1310	0.3359	2
3	A288	0.3272	3
4	A1016	0.3163	4
5	A1269	0.3075	5
6	A1455	0.3050	6
7	A821	0.3046	7
8	A1346	0.3030	8
9	A1114	0.2996	9
10	A696	0.2989	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1747	A981	0.0000	1726
1748	A1003	0.0000	1726
1749	A1301	0.0000	1726
1750	A1413	0.0000	1726
1751	A1600	0.0000	1726
1752	A1607	0.0000	1726
1753	A1680	0.0000	1726
1754	A1706	0.0000	1726
1755	A1726	0.0000	1726
1756	A1750	0.0000	1726

The Index of Zakat Recipient Based on Aggregated Weight – Pendang District.

No	Applicant	Index	Rank
1	A1872	0.3229	1
2	A1595	0.2799	2
3	A1858	0.2713	3
4	A2427	0.2673	4
5	A1040	0.2632	5
6	A2296	0.2515	6
7	A1582	0.2486	7
8	A2344	0.2465	8
9	A1879	0.2439	9
10	A1724	0.2414	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
2714	A2670	0.0000	2482
2715	A2671	0.0000	2482
2716	A2694	0.0000	2482
2717	A2703	0.0000	2482
2718	A2704	0.0000	2482
2719	A2709	0.0000	2482
2720	A2710	0.0000	2482
2721	A2713	0.0000	2482
2722	A2715	0.0000	2482
2723	A2716	0.0000	2482

The Index of Zakat Recipient Based on Aggregated Weight – Pokok Sena District.

No	Applicant	Index	Rank
1	A712	0.3431	1
2	A742	0.3427	2
3	A355	0.3426	3
4	A623	0.3331	4
5	A869	0.3249	5
6	A773	0.3154	6
7	A745	0.3095	7
8	A947	0.3080	8
9	A1007	0.3043	9
10	A905	0.3028	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1072	A631	0.0000	1064
1073	A696	0.0000	1064
1074	A702	0.0000	1064
1075	A814	0.0000	1064
1076	A850	0.0000	1064
1077	A1004	0.0000	1064
1078	A1062	0.0000	1064
1079	A1072	0.0000	1064
1080	A1075	0.0000	1064
1081	A1076	0.0000	1064

The Index of Zakat Recipient Based on Aggregated Weight – Sik District.

No	Applicant	Index	Rank
1	A1422	0.3177	1
2	A2260	0.3158	2
3	A1625	0.3112	3
4	A1657	0.3025	4
5	A1523	0.3005	5
6	A1553	0.2906	6
7	A1541	0.2866	7
8	A2145	0.2840	8
9	A1224	0.2794	9
10	A1604	0.2787	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
2332	A2317	0.0000	2242
2333	A2326	0.0000	2242
2334	A2329	0.0000	2242
2335	A2332	0.0000	2242
2336	A2333	0.0000	2242
2337	A2336	0.0000	2242
2338	A2337	0.0000	2242
2339	A2338	0.0000	2242
2340	A2339	0.0000	2242
2341	A2341	0.0000	2242

The Index of Zakat Recipient Based on Aggregated Weight – Yan District.

No	Applicant	Index	Rank
1	A893	0.2820	1
2	A725	0.2578	2
3	A836	0.2525	3
4	A548	0.2367	4
5	A772	0.2360	5
6	A982	0.2262	6
7	A742	0.2217	7
8	A1006	0.2178	8
9	A894	0.2174	9
10	A605	0.2099	10
⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮
1048	A868	0.0000	994
1049	A871	0.0000	994
1050	A883	0.0000	994
1051	A906	0.0000	994
1052	A946	0.0000	994
1053	A952	0.0000	994
1054	A1027	0.0000	994
1055	A1039	0.0000	994
1056	A1045	0.0000	994
1057	A1057	0.0000	994

APPENDIX F
The results of Factor Analysis

Criteria/Districts	Baling	Bandar Baru	Kota Setar	Kuala Muda	Kubang Pasu	Kulim	Langkawi	Padang Terap	Pendang	Pokok Sena	Sik	Yan
Total income (RM)	1237082.99	230692.97	4566668.28	1202879.45	1075817.79	997926.47	71806.78	966848.83	47531.66	770005.75	194853.29	17588.58
Basic Home Convenience tools	947	222	3354	345	880	766	46	742	56	524	194	17
Communication tools	543.5	113.5	1905	186	581	424.5	25	444	31	303	85	10.5
Electronic tools	16	5	80	16.5	28.5	46	0.5	8.5	2.5	12	3.5	0.5
Employment status	622	212	2593	563	743	622	58	613	18	438	180	10
Health status	731.25	281.75	2283.25	1132.25	1113.75	652.75	243.5	655	1289.25	425.75	926.25	496.25
Marital status	341.5	189	1414	686.5	623.5	706	151.5	380	683.5	259	558.5	262
protection	125760.55	31301.74	707242.4	98255.52	170203.01	225952.94	12450.44	91194.6	6032.8	75815.02	20586.1	3101
food and drinks	490109	100642.3	1966291.92	168045	451707.7	438758.65	31180	358255.8	18330	277900	78040	5200
clothing	92869	10751	293631.91	33567	80271.17	67895	3270	61784.41	1130	46890	10696.3	100
education	238542	34779	631015.5	78329	188301.2	158266	7750	148273.33	4360	101044	27160.5	1890
medication	113405	22243	446129.21	39964	118694	118735.4	6890	88469.2	1715	62594.98	13886	550
Transportation	699.5	119	1584.5	226	602.5	495	45	585.5	40	379	133.5	14.5
Type of property	427	164.75	1334	253	661.5	537	52.75	497.75	37.75	220.25	145.25	10.5
number of dependent	7530	1782	25252	10109	8470	5321	1519	5242	4848	3638	4686	2208
number of households	8717	2134	28110	12069	10270	6439	1965	6578	6263	3838	6107	2885

APPENDIX G
Questionnaire for criteria verification

PUSAT PENGAJIAN SAINS KUANTITATIF
UNIVERSITI UTARA MALAYSIA
BORANG SOAL SELIDIK BAGI KUTIPAN DATA UNTUK KAJIAN ILMIAH
SARJANA SAINS STATISTIK

Yang Berusaha Tuan/Puan,

Saya, Nurul Ain Binti Salehuddin Haqe (No Matrik: 826424), pelajar Sarjana Sains Penyelidikan Sepenuh Masa dalam jurusan Statistik di Pusat Pengajian Sains Kuantitiatif, Universiti Utara Malaysia, sedang menjalankan penyelidikan bertajuk '**Pembinaan Indeks dan Permodelan Kriteria Penerima Zakat di Kedah Berasaskan Had Kifayah dan Maqasid Shariah**' di bawah seliaan Dr. Malina Binti Zulkifli dan Dr. Nurakmal Binti Ahmad Mustaffa. Kajian ini dijangkakan akan menghasilkan Indeks yang dapat mengenalpasti golongan sasaran yang benar-benar layak menerima zakat berdasarkan strata mukim di negeri Kedah. Kajian juga akan mengenalpasti kriteria yang sesuai untuk digunakan dalam pemilihan penerima Zakat (Asnaf) mengikut penentuan Had Kifayah dan Maqasid Shariah.
Bagi menyiapkan kajian ini, saya memerlukan data yang berasaskan kepada pendapat pakar rujuk untuk digunakan dalam proses pembangunan Model Statistik dalam kajian ini. Sehubungan dengan itu, soal selidik ini bertujuan untuk melakukan pengesahan kriteria yang dapat mewakili ciri-ciri seorang penerima zakat dengan menilai tahap kepentingan kriteria tersebut.

Sehubungan dengan itu, saya memerlukan kepakaran YBrs. Tuan/Puan dalam bidang berkaitan dengan pengagihan Zakat, mencakupi cabang ilmu sama ada secara teori atau praktikal dalam konteks ilmu al-Quran, Hadis, Undang-Undang Shariah atau Pengurusan. Bagi tujuan tersebut, kami menjemput YBrs. Tuan/Puan untuk menjadi salah seorang pakar rujuk dan menjawab borang soal selidik bagi Fasa 1 kajian ini.

Maklumat yang diberikan adalah sulit dan akan digunakan untuk tujuan penyelidikan sahaja. Kerjasaman anda mengisi soal selidik ini sangat dihargai. Sekiranya YBrs. Tuan/Puan mempunyai sebarang pertanyaan atau berminat untuk mengetahui hasil dan penemuan penyelidikkan ini, Tuan/Puan boleh menghubungi saya melalui e-mel saya nurul_ain12@ahsgs.uum.edu.my atau penyelia saya malina@uum.edu.my dan nurakmal@uum.edu.my .

Sekian, Terima Kasih.

BAHAGIAN A – DEMOGRAFI

Sila nyatakan maklumat diri anda dengan mengisi tempat kosong dengan maklumat yang sesuai.

1.	Jawatan	
2.	Jabatan	
3.	Tempoh Pengalaman Bekerja	
4.	Tahap pendidikan	
5.	Lokasi Pejabat	
6.	Jantina	
7.	Umur	

BAHAGIAN B – PENGESAHAN KRITERIA BAGI PENERIMA ZAKAT

Di dalam bahagian ini, Tuan/Puan di minta menyatakan tahap kepentingan kriteria yang disenaraikan di bawah dalam menentukan kriteria yang boleh digunakan bagi pemilihan seorang penerima Zakat.

Nota: Kriteria-kriteria yang disenaraikan adalah hasil pengumpulan maklumat dari laporan Jabatan Perangkaan Malaysia mengenai pembinaan Paras Garis Kemiskinan (PGK) dan PGK ialah satu instrumen yang digunakan di Malaysia bagi menentukan tahap kemiskinan seseorang individu. Pengkaji mengguna pakai kriteria PGK atas fahaman bahawa sifat Had Kifayah juga adalah sebagai satu instrumen yang digunakan bagi mengukur tahap kemiskinan Asnaf Fakir dan Asnaf Miskin. Selain itu, pengkaji juga mengambil kira kriteria yang mempunyai sifat Maqasid Shariah, iaitu sesuatu ciri, sifat atau keadaan yang sukar untuk diukur dan proses penilaian tersebut hanya boleh dilakukan oleh pakar.

Kepentingan kriteria tersebut ditentukan berdasarkan skala 1 hingga 7 (1 = Tersangat-sangat tidak penting; 2 = Sangat Tidak penting; 3 = Tidak Penting; 4 = Neutral; 5 = Penting; 6 = Sangat Penting; 7 = Tersangat Penting). Sila tandakan (√) pada ruang yang disediakan untuk menilai kriteria tersebut.

Bil	**Kriteria**	**Definisi Kriteria**	**Pengukuran Kriteria**	**Skala**						
				1	**2**	**3**	**4**	**5**	**6**	**7**
1	Jumlah Pendapatan Ketua Keluarga (*Head of the family total income*)	Segala jenis pekerjaan yang dilakukan oleh individu atau ahli rumah yang menjadi sumber pendapatan untuk	Continuous (RM)							

		menyara diri dan keluarga.								
2	Pendapatan Kasar Isi Rumah (*Gross Household Income*)	Pendapatan keseluruhan yang diperoleh oleh isi rumah sama ada secara tunai atau sebaliknya yang boleh dirujuk sebagai pendapatan kasar.	Continuous (RM)							
3	Sumber Pendapatan (*Source of Income*)	Pendapatan yang digunakan untuk menyara diri dan keluarga datang dari sumber yang halal dan sah disisi undang-undang dan agama.	Nominal (Sumber: Halal/Tidak Halal)							
4	Status Pekerjaan (*Employment Status*)	Segala jenis pekerjaan yang dilakukan oleh individu atau ahli rumah yang menjadi sumber pendapatan untuk menyara diri dan keluarga	Nominal (Bekerja/ Tidak Bekerja)							
5	Menghidap Penyakit Kronik (*Suffering from chronic disease*)	Individu atau isi rumah menghidap penyakit kronik dan perlu menerima rawatan secara berterusan yang membataskan mereka untuk bekerja untuk menampung diri dan isi rumah.	Nominal (Ya/Tidak)							
6	Tahap Keuzuran (*Illness*)	Kondisi individual tau isi rumah yang menyebabkan mereka tidak dapat bergerak untuk melakukan aktiviti harian dan bekerja untuk menyara diri dan keluarga.	Ordinal (Tidak Uzur/ Uzur/ Sangat Uzur)							
7	Kecacatan (*Disable*)	Individu atau isi rumah mengalami kecacatan tubuh badan yang membataskan mereka untuk bergerak dan	Nominal (Ya/Tidak)							

		bekerja dan status kecacatan mereka disahkan oleh jabatan kesihatan.								
8	Umur (*Age*)	Usia individu atau isi rumah yang layak menerima bantuan adalah mereka yang akil baligh dan dapat membezakan baik buruk sesuatu perkara dan mampu bekerja untuk menyara diri dan keluarga.	Discrete (Tahun)							
9	Jantina (*Gender*)	Jenis kelamin seseorang individu atau isi rumah sama ada lelaki atau perempuan.	Nominal (Lelaki/ Perempuan)							
10	Status Perkahwinan (*Marriage Status*)	Status perkahwinan seseorang individu itu sama ada berkahwin, bujang, duda atau janda.	Nominal (Berkahwin/ Bujang/ Bercerai/ Balu)							
11	Alat Komunikasi (*Communication tools*)	Segala jenis alat komunikasi yang digunakan oleh individu atau isi rumah untuk berhubung sama ada personal atau pun publik.	Nominal (Ada/Tidak Ada)							
12	Bekalan elektrik dan air (*Elektrical and water supplier*)	Kediaman yang didiami mempunyai bekalan elektrik dan air bersih untuk digunakan dalam kehidupan seharian dan memberi keselesaan kepada individu dan isi rumah.	Nominal (Ya/Tidak)							
13	Kemudahan Pendidikan dan Kesihatan (*Educational and health facilities*)	Tempat kediaman berdekatan atau dilengkapi dengan kemudahan Pendidikan dan kesihatan.	Continuous (Jarak)							

14	Kemudahan Pengumpulan Sampah (*Garbage Collection Facilities*)	Kawasan kediaman mempunyai kemudahan pengurusan sampah seperti pengumpulan dan pelupusan sampah untuk menjaga kebersihan dan memberi keselesaan.	Nominal (Ada/ Tidak Ada)							
15	Peralatan dan Kemudahan Isi Rumah (*Household appliances and facilities*)	Segala alatan yang dapat memudahkan dan mempercepatkan kerja seharian dan memberi keselesaan serta kepuasan kepada individu dan isi rumah.	Nominal (Jenis alatan dan kemudahan yang dimiliki)							
16	Bilangan Anak yang Tinggal Bersama (*Number of Children Living Together*)	Jumlah Anak atau ahli keluarga yang mempunyai hubungan darah dan tinggal bersama di dalam satu rumah.	Discrete (Bilangan)							
17	Jumlah Tanggungan (*Number of Dependents*)	Jumlah anak yang berumur masih kecil, belajar, tidak bekerja dan disara oleh kedua ibu bapa.	Discrete (Bilangan)							
18	Makanan (*Food*)	Bahan yang boleh dicerna dan mengandungi semua khasiat untuk badan.	Nominal (Jenis beras atau makanan yang di ambil) Continuous (RM)							
19	Bil Utiliti (*Utility Bill*)	Segala bil yang digunakan di rumah untuk urusan seharian seperti bil elektrik dan bil air.	Continuos (RM)							
20	Gas dan Bahan Api (*Gas and Fuel*)	Semua jenis bahan api yang digunakan dalam menjalani kehidupan seharian.	Continuous (RM)							

21	Peralatan dan Penyelenggaraan Rumah (*Home Appliances and Maintenance*)	Peralatan dan penyelenggaraan rumah yang digunakan dan dilakukan untuk melengkapi atau memperbaiki kerosakkan yang memberi keselesaan kepada individu dan isi rumah.	Continuous (RM)							
22	Hutang (*Debt*)	Hutang yang terpaksa dipikul dalam kehidupan seharian untuk meneruskan hidup sama ada kepada individu, pihak bank dan lain-lain.	Nominal (Jenis Hutang) Continuous (RM)							
23	Minuman beralkohol (*Alcoholic drinks*)	Semua jenis minuman yang mengandungi alkohol yang diminum oleh individua tau isi rumah.	Nominal (Ya/Tidak)							
24	Status Pemilikkan Rumah (*Residential Ownership Status*)	Rumah yang didiami oleh individu atau isi rumah merupakan hak milik individu sendiri, sewa ataupun pusaka.	Nominal (Pusaka/ Sewa/ Peribadi)							
25	Usia Kediaman (*Residential Age*)	Ketahanan atau keutuhan sesebuah kediaman untuk didiami oleh individu atau isi rumah.	Discrete (Tahun)							
26	Lokasi Kediaman (Residential Location)	Lokasi individu dan isi rumah menetap sama ada bandar ataupun luar bandar.	Nominal (Lokasi/Tempat)							
27	Keadaan Rumah (*Residential condition*)	Kediaman individu dan isi rumah berada dalam keadaan baik, selamat dari keadaan bahaya dan selesa untuk di diami.	Ordinal (Tidak baik/ Baik/ Tersangat baik)							

28	Kemudahan penginapan – elektrik, air, alat komunikasi (*Accommodation – electrical, water, communication tools*)	Tempat menginap atau kediaman mempunyai kemudahan asas seperti air, elektrik dan alat komunikasi untuk menjalankan aktiviti harian yang memberi keselesaan dan kepuasan.	Nominal (Jenis kemudahan) Ordinal (Tidak memuaskan/ memuaskan/ sangat memuaskan)							
29	Status merokok (*Smoking status*)	Individu merupakan seorang perokok tegar dan mempunyai kesanggupan untuk membelanjakan wang pendapatannya untuk keinginannya ataupun sebaliknya.	Nominal (Ya/ Tidak) Discrete (Jumlah pengambilan)							
30	Peralatan Rumah – TV, Radio, Astro, Peti, Sejuk, Mesin Basuh, Penyaman Utara, Internet, Komputer (*Home appliances – Tv, Radio, Astro, Refrigerator, Washing Machine, Air Conditioning, Internet, computer*)	Semua jenis kelengkapan yang dimiliki dan memudahkan kerja seharian serta memberi keselesaan dan kepuasan kepada individu dan isi rumah.	Nominal (Jenis Peralatan dimiliki)							
31	Jenis Harta Tanah - Rumah, Kebun, Dusun, Sawah (*Type of Property – House, Garden, Hamlets, Rice field*)	Jenis harta dimiliki yang dibina atau di usahakan di atas tanah yang dimiliki oleh individu.	Nominal (Jenis harta tanah dimiliki)							
32	Kesihatan dan Perubatan (*Health and Medication*)	Tahap kesihatan seseorang individu yang mewajibkan mereka menerima rawatan dan pengambilan ubat-ubatan secara	Nominal (Ya/ Tidak) Continuous (RM per month)							

		berterusan yang membataskan individu untuk bekerja untuk menampung keluarga atau sebaliknya.								
33	Pendidikan (*Education*)	Segala kos Pendidikan seperti yuran pengajian, buku dan lain-lain yang berkaitan yang perlu ditanggung oleh individu ataupun ketua keluarga untuk meneruskan pengajian.	Discrete (Bilangan yang masih belajar) Continuous (RM)							
34	Pakaian dan Kasut (*Clothing and Footwear*)	Penutup badan dan anggota tangan dan kaki untuk melindungi badan daripada cuaca dan keselamatan.	Continuous (RM) Ordinal (Tidak Baik/ Baik/ Tersangat baik)							
35	Pengangkutan (*Transportation*)	Segala kos berbayar ahli rumah seperti kos tambang dan lain-lain yang berkaitan.	Nominal (Jenis pengankutan: awam/sendiri) Nominal (Jenis Kenderaan) Continuous (RM)							

(Sumber rujukan: Majlis Agama Islam Wilayah Persekutuan, 2020; Kamus Dewan Dan Pustaka, 2017; Jabatan Perangkaan Malaysia (Soalan: 1-26), 2019)

Cadangan Lain (Sekiranya ada):

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TAMAT

APPENDIX H
Questionnaire for subjective weight

PUSAT PENGAJIAN SAINS KUANTITATIF
UNIVERSITI UTARA MALAYSIA
BORANG SOAL SELIDIK BAGI KUTIPAN DATA UNTUK KAJIAN ILMIAH
SARJANA SAINS STATISTIK

Yang Berusaha Tuan/Puan,

Saya, Nurul Ain Binti Salehuddin Haqe (No Matrik: 826424), pelajar Sarjana Sains Penyelidikan

Sepenuh Masa dalam jurusan Statistik di Pusat Pengajian Sains Kuantitiatif, Universiti Utara

Malaysia, sedang menjalankan penyelidikan bertajuk '**Pembinaan Indeks Penerima Zakat Kedah (ZaKRi) dan Pemodelan Kriteria Kelayakan Penerima Zakat'** di bawah seliaan Dr. Malina Binti Zulkifli dan Dr. Nurakmal Binti Ahmad Mustaffa. Kajian ini dijangkakan akan menghasilkan Indeks yang dapat mengenalpasti golongan sasaran yang benar-benar layak menerima zakat berdasarkan strata mukim di negeri Kedah. Kajian juga akan mengenalpasti kriteria yang sesuai untuk digunakan dalam pemilihan penerima Zakat (Asnaf) mengikut penentuan Had Kifayah dan Maqasid Shariah.

Bagi menyiapkan kajian ini, saya memerlukan data yang berasaskan kepada pendapat pakar rujuk untuk digunakan dalam proses pembangunan model statistik dalam kajian ini. Sehubungan dengan itu, soal selidik ini bertujuan untuk melakukan pemilihan kriteria yang dapat mewakili ciri-ciri seorang penerima zakat dengan menilai tahap kepentingan kriteria tersebut.

Sehubungan dengan itu, saya memerlukan kepakaran YBrs. Tuan/Puan dalam bidang berkaitan dengan pengagihan Zakat, mencakupi cabang ilmu sama ada secara teori atau praktikal dalam konteks ilmu al-Quran, Hadis, Undang-Undang Shariah atau Pengurusan. Bagi tujuan tersebut, kami menjemput YBrs. Tuan/Puan untuk menjadi salah seorang pakar rujuk dan menjawab borang soal selidik bagi Fasa 2 kajian ini.

Maklumat yang diberikan adalah sulit dan akan digunakan untuk tujuan penyelidikan sahaja. Kerjasaman anda mengisi soal selidik ini sangat dihargai. Sekiranya YBrs. Tuan/Puan mempunyai sebarang pertanyaan atau berminat untuk mengetahui hasil dan penemuan penyelidikkan ini, Tuan/Puan boleh menghubungi saya melalui e-mel saya nurul_ain12@ahsgs.uum.edu.my atau penyelia saya malina@uum.edu.my dan nurakmal@uum.edu.my .

Sekian, Terima Kasih.

BAHAGIAN A: DEMOGRAFIK

Sila nyatakan maklumat seperti berikut:

1	Jawatan	
2	Tempoh pengalaman bekerja	
3	Mukim / Qariah masjid	

BAHAGIAN B: DEFINISI OPERASI

	Kriteria	Definisi
1	Tahap kesihatan	Seseorang individu yang mempunyai kesejahteraan yang sempurna dari segi fizikal, mental dan sosial.
2	Status perkahwinan	Kedudukan peribadi seseorang yang cenderung kepada orang lain dari jantina yang berbeza dan diakui secara sah dari sudut undang-undang Syariah.
3	Jenis pekerjaan	Jenis kegiatan atau aktiviti yang dilakukan oleh seseorang individu bertujuan untuk mendapatkan wang bagi memenuhi keperluan dan kehendak dalam kehidupannya.
4	Jumlah tanggungan	Bilangan ahli keluarga yang hidup bersama, sama ada saudara kandung atau bukan saudara kandung yang menjadi tanggungan ketua keluarga.
5	Bilangan isi rumah	Bilangan individu yang tinggal atau menetap di dalam rumah yang sama.
6	Alatan elektronik	Barangan yang melibatkan litar elektrik dan komponen elektrikal aktif digunakan di rumah. Contoh alatan elektronik ialah computer dan laptop.
7	Alatan asas kemudahan rumah	Barangan keperluan utama yang memudahkan aktiviti harian bagi sesebuah isi rumah untuk meneruskan kehidupan. Contoh alatan asas kemudahan rumah ialah televisyen, mesin basuh, dapur gas dan peti sejuk.
8	Alat komunikasi	Alat komunikasi elektronik jarak jauh yang membolehkan penghantaran maklumat dilakukan. Contoh alatan komunikasi ialah telefon, telefon pintar, tablet dan internet.

9	Pengangkutan	Kenderaan yang membawa seseorang atau sesuatu dari satu tempat ke satu tempat yang lain dan
		biasanya penggunaan kenderaan melibatkan jarak yang jauh atau untuk memudahkan pergerakkan.
10	Jenis harta	Pemilikan berbentuk kebendaan atau aset dimiliki oleh individu.
11	Pendapatan perkapita	Jumlah pendapatan isi rumah dibahagikan dengan bilangan isi rumah.
12	Sumber pendapatan lain	Punca pendapatan lain yang diterima oleh seseorang individu, sama ada secara berterusan atau berkala daripada hasil pencarian individu tersebut atau NGO dan agensi bantuan yang terlibat.
13	Perlindungan	Tempat berlindung bagi individu dan isi rumah daripada bahaya, cuaca buruk dan dilengkapi dengan kemudahan asas. Perlindungan merangkumi status pemilikan rumah, keadaan rumah serta kemudahan air dan elektrik.
14	Makanan	Bahan-bahan yang halal yang boleh dimakan atau diminum oleh manusia untuk mendapatkan nutrient bagi meneruskan hidup dan tidak memudaratkan kesihatan.
15	Pakaian	Sesuatu yang dipakai untuk menutup aurat bagi lelaki dan perempuan.
16	Tahap pendidikan	Tahap Pendidikan yang diterima oleh individu dan isi rumah. Contohnya ialah UPSR, PMR, SPM/SPVM, diploma dan ijazah.
17	Perubatan	Perihal berubat yang berkaitan dengan ubat atau usaha mengubati.

BAHAGIAN C: PEMILIHAN KRITERIA

Sila rujuk **Bahagian B** untuk pemilihan kriteria yang paling penting dan kriteria yang paling tidak penting.

	Soalan	Kriteria
1	Pilih kriteria **paling penting** dalam pemilihan penerima zakat.	

2	Pilih kriteria yang **paling tidak penting** dalam pemilihan penerima zakat.	

BAHAGIAN D: PEMILIHAN KRITERIA PALING PENTING

Sila rujuk **Bahagian C (1)** untuk menentukan skor bagi kriteria lain mengikut tahap kepentingan kriteria. Kategori skor adalah seperti berikut:

Intensiti keutamaan	Definisi	Penerangan
1	Sama penting	Dua kriteria yang saling menyumbang antara satu sama lain.
3	Sederhana penting	Kriteria paling penting dan sedikit penting berbanding kriteria yang lain.
5	Penting	Kriteria paling penting dan lebih penting berbanding kriteria yang lain.
7	Sangat penting	Kriteria paling penting dan sangat penting berbanding kriteria yang lain dan penguasaannya ditunjukkan secara praktik.
9	Tersangat penting	Kriteria paling penting dan tersangat penting dan terletak pada urutan tertinggi.
2,4,6,8	Nilai pertengahan	Digunakan untuk mewakili kompromi antara keutamaan kriteria pilihan yang disenaraikan di atas.

	Kriteria Paling Penting	Kriteria	Skor
1		Tahap kesihatan	
2		Status perkahwinan	
3		Jenis pekerjaan	
4		Jumlah tanggungan	
5		Bilangan isi rumah	
6		Alatan elektronik	
7		Alatan asas kemudahan rumah	
8		Alat komunikasi	
9		Pengangkutan	
10		Jenis harta	
11		Pendapatan perkapita	
12		Sumber pendapatan lain	
13		Perlindungan	

14		Makanan	
15		Pakaian	
16		Tahap pendidikan	
17		Perubatan	

BAHAGIAN E: PEMILIHAN KRITERIA YANG PALING TIDAK PENTING

Sila rujuk **Bahagian C (2)** untuk menentukan skor bagi kriteria lain mengikut tahap ketidakpentingan kriteria. Kategori skor adalah seperti berikut:

Intensiti keutamaan	**Definisi**	**Penerangan**
1	Sama penting	Dua kriteria yang saling menyumbang antara satu sama lain.
3	Sederhana penting	Kriteria paling penting dan sedikit penting berbanding kriteria yang lain.
5	Penting	Kriteria paling penting dan lebih penting berbanding kriteria yang lain.
7	Sangat penting	Kriteria paling penting dan sangat penting berbanding kriteria yang lain dan penguasaannya ditunjukkan secara praktik.
9	Tersangat penting	Kriteria paling penting dan tersangat penting dan terletak pada urutan tertinggi.
2,4,6,8	Nilai pertengahan	Digunakan untuk mewakili kompromi antara keutamaan kriteria pilihan yang disenaraikan di atas.

	Kriteria Paling Tidak Penting	Kriteria	Skor
1		Tahap kesihatan	
2		Status perkahwinan	
3		Jenis pekerjaan	
4		Jumlah tanggungan	
5		Bilangan isi rumah	
6		Alatan elektronik	
7		Alatan asas kemudahan rumah	
8		Alat komunikasi	
9		Pengangkutan	
10		Jenis harta	
11		Pendapatan perkapita	

12		Sumber pendapatan lain	
13		Perlindungan	
14		Makanan	
15		Pakaian	
16		Tahap pendidikan	
17		Perubatan	