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# Securing Survivability for Urban Poor: A Review on Food Accessibility and Food Affordability

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**Abstract:** *There are multifaceted challenges, including poverty, international and domestic food supply disruptions, labor shortages, global economic crises, natural disasters, and burgeoning global population, precipitating a formidable food security predicament. This predicament manifests in the form of compromised affordability, unreliability in accessibility, and inadequacy of available nutritious sustenance. This study is part of a larger study exploring affordable food supply via accessibility, particularly for the urban poor in Malaysia. The purpose of this study is to analyze how policymakers could improve food affordability via food accessibility for the urban poor. This study reports a desktop survey using the systematic literature synthesis process based on the keywords "urban poor", "food accessibility", and "food affordability". The results found that urban poor could improve food security by utilizing their local supply chain (LSC) with a selective coping strategy (CS). The results led to the developing a proposed Urban Poor Secured Survivability Model. This study is significant because the results identified the limitations among the urban poor in accessing nutrient-rich, safe, affordable and quality local food. The benefits of this study include guiding potential local supply chain development with local food resources. It is recommended that future studies develop a local supply chain for urban poor food security and propose a management system to enable its successful implementation.*

**Keywords:** Food Affordability, Food Accessibility, Urban Poor, Food Security, Sustainable Design Informatics

## 1. Introduction

The multifaceted challenges include poverty, international and domestic food supply disruptions, labor shortages, global economic crises, natural disasters, and a burgeoning global population, precipitating a formidable food security predicament. This predicament manifests in the form of compromised affordability, unreliability in accessibility, and inadequacy in the availability of nutritious sustenance. Food security among the Malaysian urban poor has always been a choking point for them to improve their life. Thus, there is a need to study affordable food supply for the urban poor, specifically their food accessibility challenges.

Despite local studies on urban poor in Malaysia, such as those by Harith et al. (2022), Tay et al. (2023a), Cheah et al. (2022), and Mok et al. (2023), there exist many gaps in how food accessibility may improve the urban poor's food affordability. This study aims to improve food

affordability via food accessibility for the urban poor. This study proposes to document the current situation and identify the characteristics of food accessibility which may improve food affordability. After the introduction and methodology, this study presents the systematic literature review synthesis process results. Lastly, the development of a potential urban poor secured survival model is discussed.

## 2. Methodology

The results of the literature review presented in this paper follows the "Systematic Literature Review Synthesis Process" (Masiran et al., 2020; Luo et al., 2022; Zou et al., 2023; Wu et al., 2024). This process is a stand-alone literature review typology (Rousseau, Manning & Denyer, 2008; Templier & Paré, 2015) known to make sense of a selected body of existing literature, leading to decisions regarding the background theoretical context in the early research ideation phase. Topics were identified using Ibrahim's (2008, 2011 & 2020) research question (RQ) construct categorization technique for identifying three different RQ constructs—"WHO," "WHAT", and "HOW"—in formulating the main research question. "WHO "is defined as the element being impacted by the study, "WHAT" is the information or body of knowledge required to solve the problem, and "HOW" is the targeted impact of the study. In this study, "WHO" is urban poor, "WHAT" is food accessibility and "HOW" is food affordability.

This study evaluated key components that could improve food affordability via food accessibility for the urban poor. Literature articles were identified through Scopus using keywords related to the (1) ["urban" AND "poor" AND "Malaysia"]; (2) ["accessibility" AND "Malaysia"], ["food" AND "Malaysia" AND "accessibility" OR "accessible"], and ["poor" AND "food" AND "accessibility" OR "accessible"]; and (3) ["poor" AND "food" AND "affordability" OR "Affordable"] and ["urban poor" AND "food" AND "affordability" OR "Affordable"]. A total of 662 articles were obtained. After the title and abstract review, 33 were selected for detailed review. The review outcomes included the main findings of previous scholars, how their works could support this study, and recommendations to strengthen the potential solution. The reviews were then assigned to respective subthemes based on the importance of their existence, even though some subthemes may not have many academic articles to refer to due to their emerging nature.

The results of this exercise generated a comprehensive overview for each subtheme, which the study further cross-analyzed, integrated the possibilities, and prioritized the potential solution. The prioritized results were then discussed and synthesized further to form a theoretical model as a potential solution to improve food affordability via food accessibility for the urban poor. This study adapted Ibrahim & Mustafa Kamal's (2018) systematic literature review synthesis process documentation using the online EAGLE System.

## 3. Urban Poor in Malaysia

### 3.1 Urban Poor in Malaysia

This section presents several studies regarding the current situation of the urban poor in Malaysia. Harith et al. (2022) identified the livelihood strategies of urban poor Malay households in Klang Valley, Malaysia. Their study revealed that factors such as income, health condition, upskilling capability, accessibility to public services and basic amenities, social network support, and urban agriculture determine how the urban poor Malay households managed their livelihood in the cities. Tay et al. (2023a) studied the seasonality, food security, diet quality, and nutritional status of urban poor adolescents in Malaysia. Their study found

that seasonality has a significant effect on overall diet quality ($p = 0.021$), specifically food groups such as fish ($p < 0.001$), meat/poultry/eggs ($p = 0.003$), and legumes/nuts ($p < 0.001$), and fat nutrient ($p = 0.037$) as well as anaemia status ($p = 0.020$) after controlling the confounders. Although food security did not vary with seasons, Tay et al. (2023a) determined that seasonality did affect urban poor adolescents' consumption of certain food groups as well as their anaemia status. Dietary intake was determined using a two-day, 24-h dietary recall and translated into the Standardized Malaysian Healthy Eating Index (S-MHEI). Anthropometric and haemoglobin level measurements were performed to determine nutritional status.

In another study, Tay et al. (2023b) highlighted the food security and diet quality among urban poor adolescents in Kuala Lumpur, Malaysia. They found that 47.9% of the adolescents experienced household food insecurity, 24.5% experienced individual food insecurity, 18.6% experienced household food security, and 9.0% child hunger. The mean diet quality score was 56.83 ± 10.09, with food-insecure adolescents having significantly lower MHEI scores than household food-secure adolescents ($P = 0.001$). The differences between food-secure and food-insecure households were found to be significant for energy ($P = 0.001$) and nutrients, including proteins ($P = 0.006$), carbohydrates ($P = 0.005$), dietary fibre ($P = 0.001$), folate ($P < 0.001$), and vitamin C ($P = 0.006$). In fact, multiple linear regression showed that adolescents who experienced food insecurity ($\beta = -0.328$; $P = 0.003$) were found to be significantly associated with poor diet quality ($F = 2.726$; $P < 0.01$), wherein the food security status explained 13.3% of the variation in the diet quality.

Factors predicting health-related quality of life of Malaysian B40 school-aged children living in urban poor flats in the central region of Malaysia were studied by Cheah et al. (2022). The study revealed that a quarter (24.5%) of the urban-poor children were either overweight or obese. They found that the health-related quality of life (HRQoL) total score among urban-poor children was 65.0+/-18.5. The result of multiple linear regression analysis showed that higher nutrition attitude (B=0.34, p=0.001) and practices (B=0.39, p=0.001), higher physical activity (B=3.73, p=0.004), higher lunch intake (B=1.35, p<0.001), lower supper intake (B=-1.35, p<0.001), and lower fast-food intake (B=-1.61, -1.17, p<0.001) are the significant predictors of better HRQoL among the urban-poor children (R2=0.32, F(8,399)=23.72, p<0.001).

Andoy-Galvan et al. (2020) did a cross-sectional study on income and obesity in an urban poor community. They discovered that among the 341 participants, 25 (7.3%) were underweight, 94 (27.6%) had normal weight, 87 (25.5%) were overweight, and 135 (39.6%) were obese. The proportion of obese adults (45.8%) was significantly higher than the national prevalence at 30.6% (p<0.001). Among all the tested variables, only income was significantly associated with BMI (p=0.046). Furthermore, in a qualitative study, Mok et al. (2023) found that children in Kuala Lumpur reported several barriers to eating vegetables, such as dislike of taste, sensory and appearance, limited accessibility, and vegetable availability at home. In addition, most children felt positive and interested in gardening.

In another cross-sectional study, Eng et al. (2022) examined the dietary practices, food purchase choices, and perceptions about healthy food availability and affordability of low-income Malaysian adults. Their study revealed that 89.5% of B40 adults do not consume adequate daily amounts of fruits and vegetables. In addition, 68.1% reported consuming sugar-sweetened beverages at least once per week, including commercially packed ready-to-drink beverages, sugar-added self-prepared drinks, and premixed drinks. However, the intake was statistically significantly higher among men (71.7%) and among Malays (70.3%) and Indians

(69.9%). The study also found that bread and other commercially baked goods were the most consumed processed food, with 52.9% of respondents consuming it at least once per week. The majority reported that healthy foods were moderately available and priced. The top three reported factors affecting food purchase choices were price (79.4%), availability (75%), and taste (73%).

Azhar & Mohd (2020) reassessed poverty in the northern states of Malaysia using the asset index. The households in this area are interpreted as 'poorer' when poverty is measured using assets instead of income alone. Apart from that, Malay households, households living in urban areas, and households with middle-aged heads have high poverty incidence, while households with single and highly educated heads have low poverty incidence. The logistic regression analysis also shows that the determinants of poverty incidence based on the asset index are 1) being Indian, 2) living in Penang and Perak states, 3) the age of the head of household, and 4) the distance to the education centre from home.

Lim et al. (2024) did a cross-sectional study on the fear of COVID-19, resilience, urban farming motivation, and life satisfaction among urban poor post-COVID-19 pandemic in Malaysia. Their study indicates that there are correlations between fear of COVID-19, resilience, and life satisfaction. In addition, urban farming motivation is directly related to resilience and life satisfaction. Sulaiman et al. (2023) studied the income resilience among urban poor communities in Kuala Lumpur, Malaysia. They found that 383 respondents, or 96%, have incomes below RM4,000. The income resilience index showed that almost 90% of urban poor communities are at a moderate level, and 9% are at a low level.

Literature review shows that many studies conducted on the subject were limited to certain demographics such as urban poor Malay households (Harith et al., 2022), urban poor adolescents (Tay et al., 2023a; Tay et al., 2023b), urban poor school-aged children (Cheah et al., 2022), urban poor children (Mok et al., 2023), low-income adults with gender and ethnic variation (Eng et al., 2022), and urban poor communities (Sulaiman et al., 2023). Prior studies were also focused on certain locations, such as the northern states of Malaysia (Azhar & Mohd, 2020) and Kuala Lumpur, Malaysia (Tay et al., 2023a; Tay et al., 2023b; Mok et al., 2023; Sulaiman et al., 2023) and only consider the income categories such as B40 group urban poor (Andoy-Galvan et al., 2020), or low-income adults (Eng et al., 2022). Some studies were based on time and events, such as the Northeast and Southwest monsoon season (Tay et al., 2023) and the post-pandemic period (Lim et al., 2024).

This study supports the recommendation by Harith et al. (2022) for urban poor to manage their livelihood via diversifying incomes, improving health conditions, upskilling, improving accessibility to public services and basic amenities, and social network support. In addition, urban poor assessment must include household assets (Azhar & Mohd, 2020). This study also suggests removing barriers to eating vegetables such as sensory and appearance, accessibility (Mok et al., 2023), taste, availability (Mok et al., 2023; Eng et al., 2022), and price (Eng et al., 2022). A potential solution for the urban poor would be to encourage the practice of urban farming and develop resilient income. Such suggestion could improve Health-Related Quality of Life (HRQoL) (Chech et al., 2022) measured via body mass index (BMI) (Andoy-Galvan et al., 2020) and anaemia status (Tay et al., 2023a). In view of the above, this study posits that the urban poor who lack assets must manage their livelihood to reduce food insecurity and improve health by improving their food dietary intake by removing barriers to eating and practicing urban farming.

### 3.2 Food Accessibility

This section discusses the accessibility to food by the urban poor. Shaifuddin et al. (2022) analyzed the impact of the first movement control order during the COVID-19 pandemic on food accessibility. Most of the respondents are below 35 years of age, with only 20% reporting food supply disruption. 12% reported food shortage during the initial MCO, which was significantly associated with gender, level of education, and income. A significant difference between food accessibility before and during the initial MCO was also found. Amir & Mat (2021) conducted a study on the coping mechanism for overcoming food insecurity in a community at the Malaysia-Thailand border. Their findings indicate that households adopted several coping mechanisms as well as utilized external assistance programs to reduce the impact of food insecurity. Coping mechanisms that significantly reduced vulnerability to food insecurity varied among households depending on the available resources.

Mei et al. (2020) studied the household income, food insecurity, and nutritional status of migrant workers in Klang Valley, Malaysia. They found no significant relationship between monthly household income and household food security status ($p = 0.475$) and between household food security status and weight status ($p = 0.535$). Roslan et al. (2023) studied the food supply chain assurance from the perspective of Malaysian consumer households and found that food security in the supply chain is affected by all four aspects of food security, which are 1) how easy it is to get food (food accessibility); 2) how much food is available (food availability); 3) how food is used (food utilization); and 4) how stable food is (food stability).

In another study, Ugunesh et al. (2023) performed a theory-based qualitative study on the perceived barriers towards whole grain consumption among the Malaysian adult population. The majority of respondents ($N = 30$; mean age = 39.2 years old) were females ($n = 19$, 63.3%) and lived in urban areas ($n = 23$, 76.7%). Even though over 86.7% of respondents ($n = 26$) had consumed whole grain products, the majority of them had inadequate knowledge surrounding whole grains ($n = 25$, 83.3%). Predominant barriers to whole grain consumption were perceived cost ($n = 30$, 100%), dislike towards the sensory aspects of whole grain foods ($n = 28$, 93.3%), inadequate knowledge in identifying whole grains in foods ($n = 25$, 83.3%), poor awareness ($n = 25$, 83.3%), lack of knowledge in preparation of whole grain foods ($n = 25$, 83.3%), a wide variety of other tasty cuisine alternatives in Malaysia ($n = 25$, 83.3%), low availability and accessibility of whole grain products ($n = 18$, 60%), cultural eating behaviours ($n = 17$, 56.7%) and family influence ($n = 16$, 53.3%). Moreover, longer preparation time, restrictive diets and social influences were considered minor barriers.

Shibani & Archita (2022) studied the factors affecting food accessibility of rural households in Birbhum, West Bengal. Their study revealed that the number of years of education of the heads of the households, female literacy rate, monthly income of the households, and workforce participation rate positively influence food accessibility while monthly expenses on intoxicants have a deterring effect on food accessibility of the households. Shibani & Archita (2022) defined food accessibility as the households' monthly per capita consumption expenditure (MPCE) on food. Chege et al. (2021) studied whether the retail food diversity in urban food environments influences the consumer diets in Nairobi, Kenya. They found that urban poor settings are characterized by a variety of food retail venues including informal markets such as kiosks, mom-and-pop shops, and tabletop vendors as well as modern retail outlets such as supermarkets. Most of these food outlets predominantly sell unhealthy, highly-processed, and energy-dense foods rather than nutritious foods such as vegetables, fruits and animal products. Their analyses showed that supermarkets have the highest market-level diversity scores (MLDS), yet they do not significantly influence the diets of resource-poor households.

However, a high MLDS among informal retail outlets has a positive association with diet quality; conversely, open-air markets have a negative association.

Peng & Kaza (2020) studied the association between neighbourhood food access, household income, and the purchase of snacks and beverages in the United States. Their multivariate analysis showed that poor households in neighbourhoods with few convenience stores purchased more snacks than poor households in neighbourhoods with many convenience stores ($b = -0.008$, $p < 0.05$). Non-poor households in neighbourhoods with many convenience stores and fewer supermarkets purchased more snacks than non-poor households with few convenience stores and many supermarkets ($b = 0.002$, $p < 0.05$ for convenience stores; $b = -0.027$, $p < 0.05$ for supermarkets). The increase in the number of convenience stores decreased the purchase of snacks by poor households but increased in non-poor households. On the other hand, the increase in the number of supermarkets discouraged the purchase of snacks by non-poor households but had no effect on the purchasing behaviour of the poor households.

Konapur et al. (2022) ran a contextual assessment of the food environment based on availability, accessibility, affordability, acceptability, and accommodation in the villages of Ghatkesar subdistrict ($n = 4$), Telangana, South India. They found that actual and perceived 5 A's (availability, accessibility, affordability, acceptability, and accommodation) for semi-perishable foods matched, and hence the food environment was graded as good across the villages. However, for perishable foods, the food environment was graded as poor with respect to accommodation and acceptability in all villages, and the same result was observed for availability and affordability in at least 2 villages where the actual and perceived measures did not match.

Chenarides et al. (2021) examined the relationship between dollar store expansion and food access. They found that both the presence and entry of dollar stores are not more likely to be associated with areas categorized as "low-income and low-access"; however, they found that once a dollar store enters a food desert, that area is more likely to remain without access to a supermarket.

Mkusa & Hendriks's (2022) study on food insecurity status in Malawi's major cities revealed that the majority of households experienced seasonal food insecurity four months of the year and spent three-quarters of their budget on food. In addition, poor households with uneducated male heads with a high number of dependents and few income sources were most likely to experience food insecurity. In an earlier study, Akpaki et al. (2020) assessed the food availability and food insecurity situation among communities of Matam region, Senegal, and identified between 49 and 64 different foods, mostly from plant sources. Around 75% of households had 0 to 3 foods and 7%, 7 to 10; 64% of all households were severely food insecure. Food availability at the household level and socioeconomic status was positively associated with household food security, whereas food availability at the community level was negatively associated.

To sum up, most studies focused on respective demographics and locations such as Malaysian households at Malaysia-Thailand border (Amir & Mat, 2021); Malaysian adults (Ugunesh et al., 2023); Klang Valley households (Roslan et al., 2023); migrant workers in Klang Valley, Selangor (Mei et al., 2020); selected rural households in Birbhum, West Bengal (Shibani & Archita, 2022); slum neighbourhoods in Nairobi, Kenya (Chege et al., 2021); United States (Peng & Kaza, 2020); villages of Ghatkesar subdistrict, Telengana, South India (Konapur et al., 2022); major cities in Malawi (Mkusa & Hendriks, 2022); and Matam region, Senegal

(Akpaki et al., 2020). Some studies were further limited by past datasets such as Peng & Kaza (2020) using Nielsen Homescan Consumer Panel 2010 dataset, Chenarides et al. (2021) analyzing the time period between 2000-2017, and Mksuda & Hendriks (2022) using Malawi's fourth Integrated Household Survey (2016/17). In addition, studies like Ugunesh et al. (2023) explored whole grain consumption, while Peng & Kaza (2020) examined the snacks and beverages expenditures. Lastly, Shaifuddin et al. (2022) focused on the COVID-19 pandemic period.

In response to the above, this study determines that food accessibility for the urban poor could be divided into household and community level. This study proposes to define food accessibility as having more food security, better diet quality among the urban poor, as well as being tragedy resilient. Such food accessibility would require external assistance programs for the local supply chain to offer diversified foods with minimal eating barriers.

### 3.3 Food Affordability

Prior studies on food affordability are mainly related to COVID-19 pandemic, government interventions, food costs, and determinants. Akter et al. (2022) ran a path analysis on how the COVID-19 pandemic affected the food environment, food purchase, and fish consumption among low-income urban households in Bangladesh. The majority of respondents (84–89%) reported that food access was more difficult, food prices increased, and food purchases decreased during the COVID-19 pandemic compared to pre-COVID. Fish and meat were more difficult to access, more expensive and thus, purchased less compared to other foods (74–91% of respondents). Compared to the pre-COVID-19 period, low-income urban households consumed less fish during the COVID-19 pandemic and reported compromised variety and quality of fish. In the path analysis, food access was associated with food purchase ($b = 0.33$, $p < 0.001$). Food purchase was associated with the quantity, variety, and quality of fish consumed. Food price was inversely associated with the quality of fish consumed ($b = -0.27$, $p < 0.001$).

Tirivingasi et al. (2023), from their assessment of climate change and urban poverty in the context of the COVID-19 lockdowns in Zimbabwe, found that climate change increased food insecurity in urban areas. In addition, low agricultural output and climate change impacts compromised food availability and affordability for urbanites. In the same year, Mwambi et al. (2023) studied the cost and affordability of a healthy diet for urban populations in Thailand and the Philippines before and during the COVID-19 pandemic. Their study found that the average cost of the recommended diet was US$ 1.55 per person/day in Bangkok and US$ 3.76 in Manila (2019 prices in purchasing power parities) immediately before the pandemic. The diet was generally affordable for all households in Bangkok, but only for 37% of households (4.98 million people) in Manila, indicating much higher poverty in the latter. The pandemic and associated government measures decreased the cost of the recommended diet by 6.5% in Bangkok ($p = 0.001$) but not in Manila ($p = 0.167$). Assuming contractions in people's food budgets of 15–20%, the recommended diet became unaffordable for 0.08–0.12 million people in Bangkok and 6.32–7.73 million people in Manila during the pandemic. Government relief largely compensated for this loss in Bangkok, but relief payments in Manila were not enough to compensate the effect.

Furthermore, several studies covered food affordability and government interventions. Kimani-Murage et al. (2022) ran a participatory qualitative study on the lived experiences of the urban poor in Kenya with the impacts of the government's response measures. They found the food supply chain was disrupted causing limited availability and access to affordable, safe, adequate,

and nutritious food. Consequently, hunger and increased consumption of low-quality food were reported. Some households resorted to progressive measures such as urban farming and food sharing in the community. Zhong et al. (2023) ran a case study on urban food insecurity and the impact of China's Affordable Food Shop (AFS) program in Nanjing City. They found that food insecurity in Nanjing is generally low. However, increased food insecurity is associated with lived poverty, lower income, and unaffordability of staple foods. The food insecurity was not mitigated by the proximity to an AFS.

In addition, several studies touched on food affordability and food costs. Among them, Ansah et al. (2024) studied the simulating policy options for improving household resilience to food demand shocks in the context of West Africa. The researchers found that a 20% general increase in food prices induces a demand switch from all other foods to basic staples and miscellaneous foods while a 20% reduction in available food expenditure dampens demand for pulses, greens, protein foods, and oils. Bwanaisa & Hendriks (2023) found that for Malawi's poor between 2017 and 2021, even the most basic meal was not affordable. Their study revealed that based on the World Food Program's "basic plate"—even when combining local substitutes to form "alternative plates"—was not affordable to those living at or below the international poverty line over this period.

Additionally, Wangithi et al. (2023) studied consumer willingness to pay a premium for orange-fleshed sweet potato (OFSP) puree products based on the Becker-DeGroot-Marschak experimental auction among low- and middle-income consumers in selected regions of Nairobi, Kenya. They found limited awareness on OFSP puree products among men and women. However, both men and women were willing to pay a premium for the OFSP puree products. The intergender comparison showed that women were more willing to pay a premium for the OFSP puree products than men. This study found gender, age, education, knowledge of OFSP puree products, income category, availability of nutritional information, and reference pricing stand out as significant determinants of willingness to pay (WTP).

Hirvonen et al. (2020) ran a global analysis on the affordability of the EAT-Lancet reference diet. The researchers found that the most affordable EAT-Lancet diets cost a global median of US$2·84 per day (IQR 2·41–3·16) in 2011, of which the largest share was the cost of fruits and vegetables (31·2%), followed by legumes and nuts (18·7%), meat, eggs, and fish (15·2%), and dairy (13·2%). The diet costs a small fraction of average incomes in high-income countries but is not affordable for the world's poor. The researchers estimated that the cost of an EAT–Lancet diet exceeded household per capita income for at least 1·58 billion people. The EAT–Lancet diet is concluded as more expensive than the minimum cost of nutrient adequacy, on average, by a mean factor of 1·60 (IQR 1·41–1·78).

Moreover, Mekonen et al. (2023) studied the determinants of urban food security status at the household level in Bahir Dar and Gondar Cities of the Amhara Region, Ethiopia. They found that only 31% of married households were food insecure, in contrast to 80% of single-headed ones. In addition, food insecurity is most prevalent among private house renters at 83% as opposed to 28% who own their houses. They also found that sex, house ownership, income, marital status, remittances, and credit services were significant drivers of household food insecurity. Chege et al. (2021) studied what determines the consumption of nutritious foods by the urban poor in Africa. The results indicated that households with access to nutrition information are more likely to consume porridge with diversified ingredients than those without nutrition information.

However, studies on food affordability are likewise limited to their demographics and/or location, like those regarding food accessibility. In addition, some studies are period-based or event-based. Therefore, this study proposes to improve food affordability by understanding the parameters of reduced purchasing power among the urban poor. Such parameters would signal challenges in obtaining a recommended diet based on available local foods that cost below the urban poverty line.

### 3.4 Discussion

This section further analyzes, combines potentials, and prioritizes the literature summaries based on the subtheme of "Urban Poor", "Food Accessibility", and "Food Affordability". It then synthesizes the findings to seek a high-potential solution to fulfil the need for affordable food supply for the urban poor. This study determines that the urban poor has difficulty obtaining affordable food. The literature review revealed that the urban poor (who lack assets) must manage their livelihood to reduce food insecurity and improve health by: 1) improving food dietary intake (diet quality, nutrients, variety of food groups); 2) removing barriers to eating; and practicing urban farming (gardening). This study also determines that food accessibility for the urban poor could be divided into household and community levels. This study proposes to define food accessibility as having more food security, better diet quality, and resilience to tragedy. Such food accessibility would require external assistance programs for the local supply chain to offer diversified foods with minimal eating barriers. Additionally, this study proposes to improve food affordability by understanding the parameters of reduced purchasing power among the urban poor, whereby such parameters would signal challenges in obtaining recommended diets based on available local foods that cost below the urban poverty line.

In view of the above, the development of local food supply could reduce food insecurity through coping strategies, namely managing livelihood, removing barriers to eating, urban farming (gardening), and external aid programs. These may improve the health and health of the urban poor (who lack assets), food accessibility (having more food security, better diet quality, and being tragedy resilient), dietary intake (diet quality, nutrients), and health.

Furthermore, this study suggests improving food security and awareness and mitigating associated poverty challenges among the urban poor. The local supply chain must review the urban poor parameters of reduced purchasing power by offering local diversified foods which cost below the urban poverty line through external assistance programs. This study finds the need for the urban poor to improve food security by increasing food affordability by reviewing their purchasing power to plan their dietary intake based on affordable local foods using food awareness, food accessibility and availability. Hence, the urban poor could secure their survivability by increasing food security, decreasing food insecurity, improving health, and mitigating associated poverty challenges.

Therefore, this study recommends that the urban poor improve their food security by utilizing a local supply chain (LSC) with a selective coping strategy (CS). The synthesis is summarized using the Point of Departure Tree (POD) Tree Diagram in Figure 1 and the proposed conceptual framework for "Urban poor secured survivability" is illustrated in Figure 2.

| | | |
|---|---|---|
| **URBAN POOR**<br>*Urban poor (UP) must manage their livelihood to reduce food insecurity and improve health by improving dietary intake through removing barriers to eating or urban farming.* | **FOOD ACCESSIBILITY**<br>*Food accessibility among urban poor (UP) on household level and community level, defined by having more food security, better diet quality among UP, and being tragedy resilient, requires external assistance programs for the local supply chain, which offers diversified foods with minimal eating barriers.* | **FOOD AFFORDABILITY**<br>*To increase food affordability, Urban poor (UP) must review their signs of reduced purchasing power to obtain a recommended diet based on local foods which costs below urban poverty line to mitigate associated poverty challenges which can be resolved through food awareness, food accessibility, and food availability.* |
| **URBAN POOR FOOD ACCESSIBILITY STRATEGY**<br>*The development of local food supply could reduce food insecurity through coping strategies and may improve urban poor's (UP) food accessibility, food dietary, and health.* | **URBAN POOR FOOD SECURITY**<br>*To increase food security, food awareness, and to mitigate associated poverty challenges among urban poor (UP), local supply chain must review UP's signs of reduced purchasing power to offer local diversified foods with minimal eating barriers based on a recommended dietary intake which costs below urban poverty line through external assistance programs.* | **URBAN POOR FOOD AFFORDABILITY STRATEGY**<br>*To increase food affordability, urban poor (UP) must review their purchasing power to plan dietary intake based on local foods which costs below urban poverty line; and UP must apply coping strategies which can be done through food awareness, food accessibility and availability which may reduce food insecurity, improve health, and mitigate associated poverty challenges.* |
| **URBAN POOR FOOD SECURITY STRATEGY**<br>*Coping strategies utilizing local supply chain must increase food awareness and must review urban poor's (UP) purchasing power to offer recommended local dietary intake with minimal eating barriers for increasing food security, reducing food insecurity which may improve health, and mitigate associated poverty challenges.* | **COMPREHENSIVE URBAN POOR FOOD SUPPLY CHAIN**<br>*Coping strategies utilizing local supply chain must increase food awareness and must review urban poor's (UP) purchasing power to offer recommended local dietary intake with minimal eating barriers for increasing food security, reducing food insecurity which may improve health, and mitigate associated poverty challenges.* | |
| **URBAN POOR SECURED SURVIVABILITY**<br>*Urban Poor (UP) could improve their food security by utilizing their local supply chain (LSC) with selective coping strategy (CS).* | | |

**Figure 1: Point of Departure (POD) Tree Diagram for Developing the Proposed Urban Poor Secured Survivability. (Adapted from Ibrahim & Mustafa Kamal, 2018)**

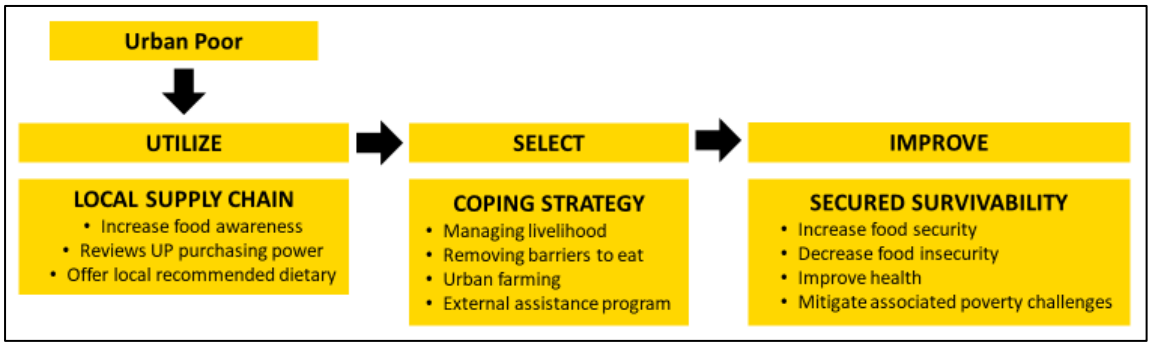


**Figure 2: Conceptual Framework for Developing the Proposed Urban Poor Secured Survivability (Adapted from Ibrahim & Mustafa Kamal, 2018)**

## 4. Conclusion

This study aims to improve food affordability via food accessibility for the urban poor. The results of the systematic literature review synthesis process on the subthemes of urban poor, food accessibility, and improving food affordability found that urban poor could improve their food security by utilizing their local supply chain (LSC) with a selective coping strategy (CS). The results led to the development of a proposed Urban Poor Secured Survivability Model. This study is significant because the results identified the limitations in accessing affordable and quality local food among the urban poor. The benefits of this study include guiding potential local supply chain development with local food resources using the proposed model. Future studies are recommended to develop a local food supply chain for the urban poor's food security and to propose a management system to enable its successful implementation.

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