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LIVELIHOOD RESILIENCE OF MICRO, SMALL, AND MEDIUM ENTERPRISE (MSME)-BASED URBAN KAMPONGS DURING THE COVID-19: A CASE STUDY OF SEMARANG, INDONESIA

Hendrianto Sundaro¹, Iwan Rudiarto², Wiwandari Handayani³

¹ *Doctoral Program in Architecture and Urban Planning,*

^{2,3} *Department of Urban and Regional Planning,*

UNIVERSITAS DIPONEGORO, SEMARANG, INDONESIA

Abstract

While social restriction policies effectively curbed the spread of COVID-19, they disrupted the livelihoods of Micro, Small, and Medium Enterprises (MSMEs) in Semarang's urban kampongs, underscoring the critical role of resilience in sustaining these communities. This study examines the livelihood resilience of MSME-based urban kampongs affected by the pandemic using the Livelihood Resilience Index (LRI). Surveys were conducted with 100 MSME actors across three urban kampung clusters. The results reveal a moderate average LRI score (0.41–0.60), indicating adequate but not robust levels of resilience. Nevertheless, substantial improvements are required to strengthen the clusters' adaptive and transformative capacities to enable recovery, build resilience, and exceed pre-crisis conditions. These findings highlight the need for targeted interventions to reinforce the long-term resilience of MSME-based urban kampongs against future shocks.

Keywords: Covid-19; Urban Kampung's; Livelihood Resilience; MSME, Semarang

¹ Corresponding author. Email: hendrianto@usm.ac.id

INTRODUCTION

The COVID-19 pandemic has caused unprecedented global disruption. Within a short period, the virus spread rapidly, resulting in over 6 million deaths worldwide (Okezone Health, 2022; WHO, 2022). Urban areas were disproportionately affected, accounting for approximately 95% of COVID-19 cases and impacting more than 1,500 cities globally (Acuto et al., 2020). To control the spread, governments worldwide implemented two primary measures: vaccination programs and lockdown or social restriction policies. However, these measures have had adverse effects on Micro, Small, and Medium Enterprises (MSMEs) across many countries. For example, in Malaysia, informal workers comprise over three-quarters of the service sector workforce, making this sector particularly vulnerable to pandemic-induced economic disruptions (Lm et al., 2024). In Indonesia, MSMEs numbered 67 million units in 2020 and contributed 60.5% to the national GDP by 2021 (Syamsudin, 2020). Many of these enterprises operate within urban kampongs, underscoring their critical role in urban economies and livelihoods.

Geographically, urban kampongs are predominantly located near sources of livelihood, giving rise to the specific forms of employment, most of which are informal (Obermayr, 2017b). This explains why urban kampongs host many MSMEs and function as key drivers of community livelihoods. In Semarang, one of Indonesia's metropolitan areas, MSMEs are highly concentrated in three urban kampung clusters: central, eastern, and southern Semarang (Sundaro et al., 2024). However, the pandemic has raised serious concerns about the sustainability of these settlements, where residents' livelihoods depend heavily on MSME activities. Many enterprises were forced to close, leaving their operators—particularly those in urban kampongs—in a state of social and economic uncertainty. Urban kampongs, defined as unplanned and densely populated settlements typically located in the city centers (Obermayr, 2017b), evolve organically over time through both physical and non-physical processes. They are characterized by high building density, inadequate infrastructure, limited land availability, and strong social and kinship interactions (Anindito et al., 2019; Sundaro et al., 2024).

Despite their vital role in the urban economies, urban kampongs remain socially and economically vulnerable (Lindarni et al., 2014). Their sustainability is thus closely tied to the resilience of community livelihoods in the face of diverse shocks, including the COVID-19 pandemic. Livelihood assets—such as social, human, physical, financial, and natural capital—are widely recognized as key components that strengthen community resilience (DFID, 1999). Considering the likelihood of emerging urban threats in various forms, examining livelihood resilience in urban kampongs during the COVID-19 pandemic is essential.

Previous studies on livelihood resilience—such as those by Galarza-Villamar et al. (2024), Hossain et al. (2020), Insani et al. (2022), Sahoo & Sivaramakrishnan (2024), and Weldegebriel & Amphune (2017)—have primarily focused on the impacts of climate change on farmers, fishers, communities, or other vulnerable groups. By contrast, research on livelihood resilience outside the context of climate change, such as in outbreaks or pandemics (e.g., COVID-19), remain limited. This study seeks to address this gap by assessing the livelihood resilience of urban kampongs during the COVID-19 pandemic. In doing so, it broadens the resilience discourse, which has been dominated by climate change studies, by highlighting COVID-19 as a new urban threat to community livelihoods, particularly MSME actors in urban kampongs.

LITERATURE REVIEW

Over the past decade, the concept of resilience has evolved significantly in both literature and policy (Meerow et al., 2016). In urban studies, diverse frameworks for urban resilience have been developed to address contemporary urban challenges (ARUP et al., 2014). Resilience is used to evaluate a system's capacity to absorb, adapt to, and transform in response to external shocks and pressures (Walker et al., 2004). This principle applies to both local communities and their surrounding ecosystems (Folke, 2006). Urban kampongs—a common type of local community in Indonesian cities—are characterized by narrow road access (micro-mobility) and limited public spaces (Anindito et al., 2019). From a non-physical perspective, urban kampongs are dense settlements marked by heterogeneous populations, high levels of social interaction, and a strong sense of kinship (Anindito et al., 2018).

Kampongs remain a preferred choice for affordable housing, particularly among low-income groups, including those working in the informal sector or MSMEs earning below the Regional Minimum Wage (UMK) (Violita & Yulastuti, 2020). They are a typical feature of Indonesian cities and are expected to remain a dominant part of the country's urban landscape (Putra et al., 2019). According to Law Number 20 of 2008 on MSMEs, the Indonesian government classifies businesses based on asset and revenue criteria, focusing on operational performance. The development of MSMEs in Indonesia has been rapid, particularly in urban kampongs. However, the COVID-19 pandemic significantly impacted this sector. Caused by the SARS-CoV-2 virus, COVID-19 spreads through airborne transmission and direct contact. It was first detected in Wuhan, China, in December 2019, and the first confirmed case in Indonesia was reported on March 2, 2020. Following this, the government issued Government Regulation Number 21 of 2020, which introduced large-scale social restrictions and community activity restrictions, which significantly affected businesses and residents in urban kampongs that rely on MSMEs.

Livelihood resilience is essential not only for physical survival but also for long-term well-being in the face of uncertainty. The concept of livelihood was first introduced by Robert Chambers in 1991, who developed the Sustainable Livelihoods Framework (SLF) to assess the sustainability of community livelihoods (Chambers, 1991). Livelihood resilience refers to the capacity of individuals, households, or communities to cope with, adapt to, and recover from shocks and stresses that affect their livelihoods, while maintaining or even improving their well-being (Chambers, 1991; DFID, 1999). In urban kampongs, livelihood assets—such as human capital, physical capital, social capital, and financial capital—are used as variables to assess livelihood resilience. These assessments are conducted using the Livelihood Resilience Index (LRI) and resilience radar developed by DFID (1999) and Bolte et. al (2017).

RESEARCH METHOD

Study Area

The selection of Semarang as the research location is based on several key factors. First, Semarang has a rich historical background dating back to the colonial era, with urban kampongs playing a vital role in preserving local traditions and culture—elements that are integral to the city's development. Second, as a major center for trade and services, Semarang is one of Indonesia's cities with relatively strong economic growth and is home to numerous MSMEs that contribute significantly to the city's economic dynamics. Third, Semarang is among the cities most economically affected by the COVID-19 pandemic, raising concerns about the sustainability of urban kampongs, particularly those where most residents are employed in the MSME sector. This research build on previous studies conducted by Sundaro et., al (2024), which examined three clusters encompassing 16 urban kampong areas: Cluster 1 in Central Semarang, Cluster 2 in East Semarang and Gayamsari, and Cluster 3 in South Semarang (Figure 1).

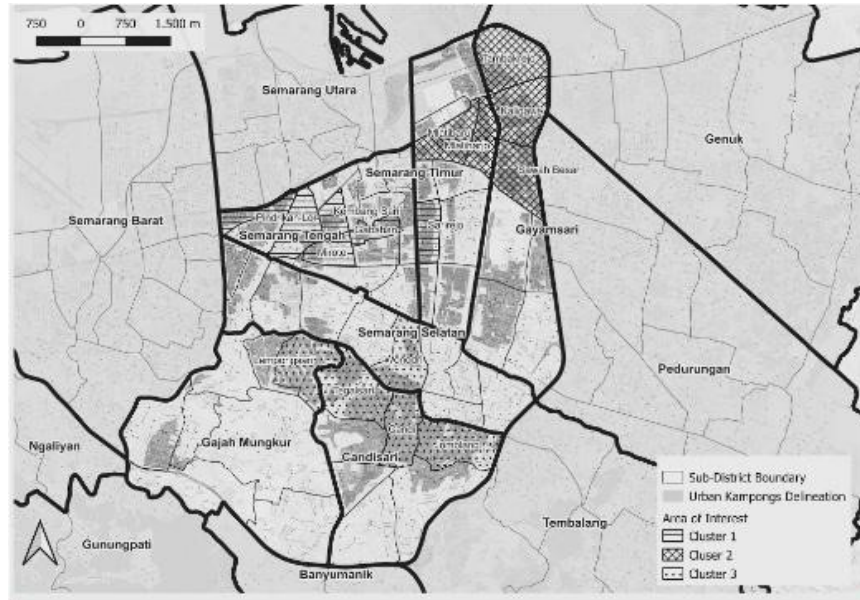


Figure 1. Study area of three clusters of urban kampongs

Data and Method

The data for this study consists of both secondary and primary sources. The secondary data include information from 925 MSMEs obtained from the Semarang City Bappeda in 2024. Primary data were collected through questionnaires on livelihood assets, administered before, during, and after the COVID-19 pandemic. The questionnaires were distributed in September 2024. The respondents for this study included 100 MSME actors from three clusters, with the sample size calculated using the Slovin formula: $n = \frac{N}{1+N(e)^2}$

This study employs the LRI framework developed by DFID (1999). The assessment is based on questionnaire data comprising 60 items across four variables and 17 indicators (Table 1). These questionnaire design draws on indicators adapted from DFID (1999) and Weldegebriel & Amphune (2017).

Table 1. Variables and indicators of Livelihood Resilience Index

Variable	Indicator	Category
Human Capital	Business Motivation	Levels of motivation and commitment in operating businesses before, during, and after the COVID-19 pandemic
	Workforce	Ease of access to labor before, during, and after the COVID-19 pandemic
	Knowledge	Level of understanding regarding business-related activities before, during, and after the COVID-19 pandemic
	Skills	Skill level in managing a business before, during, and after the COVID-19 pandemic

Variable	Indicator	Category
Physical Capital	Education	Formal and/or informal educational attainment before, during, and after the COVID-19 pandemic
	Health	Health status before, during, and after the COVID-19 pandemic
	Business Location	Business premises, location, and facilities before, during, and after the COVID-19 pandemic
	Production Tools	Production tools in terms of quantity and quality before, during, and after the COVID-19 pandemic
	Market Access	Ease of market access before, during, and after the COVID-19 pandemic
Social Capital	Business Networks	Business network reach before, during, and after the COVID-19 pandemic
	Trust	Trust among residents before, during, and after the COVID-19 pandemic
	Cooperation	Level of cooperation among residents in community activities, characterized by meeting frequencies ranging from more than once per month to less than once every three months before, during, and after the COVID-19 pandemic
Financial Capital	Financial Access	Ease of financial access before, during, and after the COVID-19 pandemic
	Annual Turnover	Annual turnover ranging from less than 60 million/year to over 181 million/year before, during, and after the COVID-19 pandemic
	Daily Income	Daily income ranging from less than Rp 165,000/day to over Rp 660,000/day before, during, and after the COVID-19 pandemic
	Monthly Expenditures	Household expenditures ranging from less than Rp 2 million/month to over Rp 7 million/month before, during, and after the COVID-19 pandemic.
	Savings	Savings ranging from less than Rp 500,000/month and irregular to over Rp 1 million/month and regular before, during, and after the COVID-19 pandemic

A Likert scale was applied to assign numerical values to the 17 indicators representing all variables under study. Scores ranged from 1 (minimum) to 4 (maximum). The resulting data were used to analyze the LRI and to construct the resilience radar framework introduced by DFID (1999) and Bolte et.,al (2017). The analytical process is outlined as follows:

1. Calculating the Variable Index

$$M_h = \frac{\text{the } \sum_{i=1}^n \text{ Indeks}}{n} \dots\dots\dots(i)$$

M_h is one of the four variables used to evaluate the Livelihood Resilience Index. The index Shi represents the indicators indexed by i that form each variable, where n is the number of indicators in each variable.

2. Calculating the Livelihood Resilience Index

$$LRI = \frac{\text{the } \sum_{i=1}^{n=4} M_{hi}}{n} \dots\dots\dots(ii)$$

LRI is the average resilience index of the four variables. M_{hi} represents the index value of each variable, and n is the number of variables.

3. Interpreting the Index Value

After the LRI is determined, the next step is to interpret the index value by grouping it to understand the level of resilience, as shown in Table 2.

Table 2. Interpretation of the Livelihood Resilience Index (LRI)

Index Value	Resilience Level
0.81 – 1.00	Very High
0.61 – 0.80	High
0.41 – 0.60	Moderate
0.21 – 0.40	Low
0.00 – 0.20	Very Low

Source: Bolte et al. (2017)

RESULT

Livelihood Resilience Index for Cluster 1 (Central Semarang)

In Cluster 1, social capital emerges as the strongest livelihood asset both before, during, and after the COVID-19 pandemic, as indicated by the resilience radar (Figure 2). This strength is underpinned by high level of trust and cooperation among the residents of the urban kampong, although the business networks remain relatively moderate. The frequency of community meetings—held more than once a month for social and religious activities—demonstrates strong participation and collaboration. Notably, the trust among residents, which had declined during the pandemic, has shown substantial improvement.

Financial capital is the weakest livelihood asset in Cluster 1, with all related indicators classified as low. During the COVID-19 pandemic, financial capital declined further and was categorized as very low. In contrast, physical and human capital were both classified as moderate. Post-pandemic, the human capital index has improved slightly, particularly in indicators such as work motivation and knowledge, although the increase is not statistically significant (Table 3).

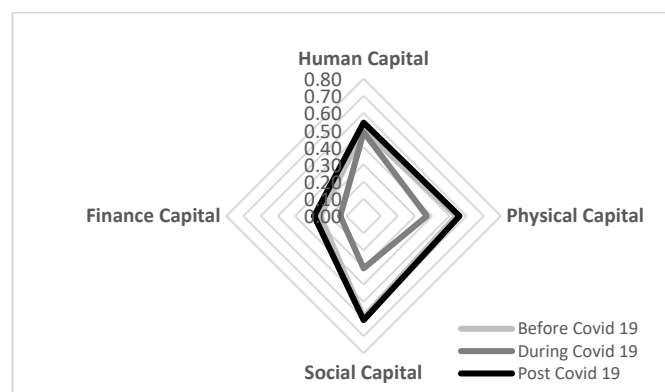


Figure 2. Cluster 1 Resilience Radar

Table 3. Livelihood Resilience Index for Cluster 1

Variable	Indicator	Livelihood Resilience Index		
		Before Covid 19	During Covid 19	Post Covid 19
Human Capital	Motivation to work	0.61	0.54	0.69
	Availability of workforce	0.43	0.25	0.40
	Knowledge	0.37	0.48	0.49
	Skills	0.55	0.46	0.52
	Education	0.39	0.39	0.39
	Health	0.65	0.81	0.76
	Average	0.50	0.49	0.54
	Category	Moderate	Moderate	Moderate
Physical Capital	Place of Business	0.49	0.38	0.52
	Production Tools	0.55	0.42	0.60
	Market access	0.58	0.31	0.56
	Average	0.54	0.37	0.56
	Category	Moderate	Low	Moderate
Social Capital	Business network	0.46	0.33	0.52
	Trust	0.63	0.50	0.64
	Cooperation	0.68	0.08	0.65
	Average	0.59	0.31	0.61
	Category	Moderate	Low	High
Finance Capital	Financial access	0.39	0.27	0.49
	Annual turnover	0.11	0.02	0.14
	Income / day	0.26	0.05	0.29
	Expenses / month	0.12	0.11	0.15
	Savings	0.38	0.23	0.37
	Average	0.25	0.14	0.29
	Category	Low	Very Low	Low

Livelihood Resilience Index for Cluster 2 (East Semarang and Gayamsari)

The average resilience index for Cluster 2 is 0.41, placing it in the moderate resilience category. However, this score lies at the lower threshold category, suggesting that Cluster 2 is at risk of falling into the low resilience range (0.21-0.40). Financial capital is the weakest livelihood asset in Cluster 2 after COVID-19 (Figure 3), with this index remaining in the low category from pre- to post-pandemic (Table 4). In contrast, social capital is the strongest asset, although its index declined slightly from 0.61 (high) before the pandemic to 0.59 (moderate) afterward. Indicators of physical capital—such as business premises, production tools, and market access—also decreased compared to pre-pandemic levels. Meanwhile, the human capital index has recovered to the moderate category, returning to its pre-pandemic condition.

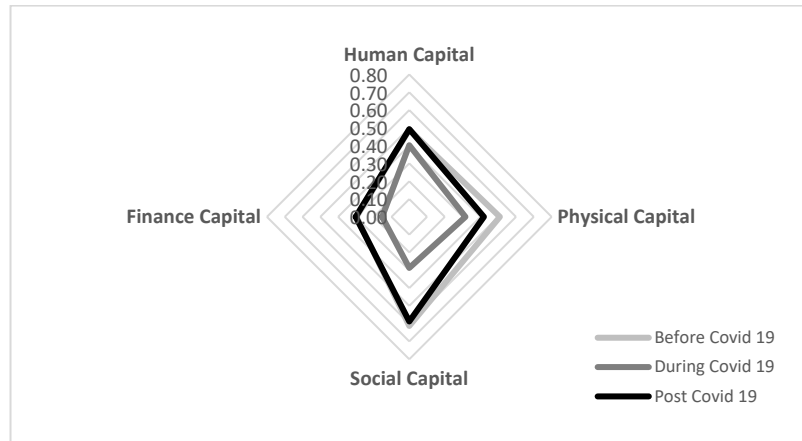


Figure 3. Cluster 2 Resilience Radar

Table 4. Livelihood Resilience Index for Cluster 2

Variabel	Indicator	Livelihood Resilience Index		
		Before Covid 19	During Covid 19	Post Covid 19
Human Capital	Motivation to Work	0.71	0.51	0.70
	Availability of Workforce	0.41	0.18	0.35
	Knowledge	0.27	0.34	0.42
	Skills	0.45	0.20	0.33
	Education	0.37	0.37	0.37
	Health	0.73	0.82	0.78
	Average	0.49	0.40	0.49
	Category	Moderate	Low	Moderate
Physical Capital	Place of Business	0.51	0.37	0.34
	Production Tools	0.53	0.37	0.45
	Market Access	0.49	0.22	0.46
	Average	0.51	0.32	0.42
	Category	Moderate	Low	Moderate
Social Capital	Business Network	0.41	0.22	0.35
	Trust	0.65	0.48	0.59
	Cooperation	0.78	0.16	0.82
	Average	0.61	0.29	0.59
	Category	High	Low	Moderate
Finance Capital	Financial Access	0.44	0.22	0.43
	Annual Turnover	0.20	0.05	0.19
	Income / day	0.22	0.08	0.24
	Expenses / month	0.22	0.15	0.29
	Savings	0.41	0.27	0.35
	Average	0.30	0.15	0.30
	Category	Low	Very Low	Low

Livelihood Resilience Index for Cluster 3 (South Semarang)

The average resilience index for Cluster 3 is 0.43, placing it in the moderate resilience category. Similar to Clusters 1 and 2, social capital is the strongest livelihood asset, whereas financial capital is the weakest. All physical capital indicators declined slightly, with the average index decreasing by 0.02 compared

with pre-pandemic levels, although they remain within the moderate category. Human capital improved by 0.05 relative to its pre-pandemic score but continues to fall within the moderate resilience category (Table 5).

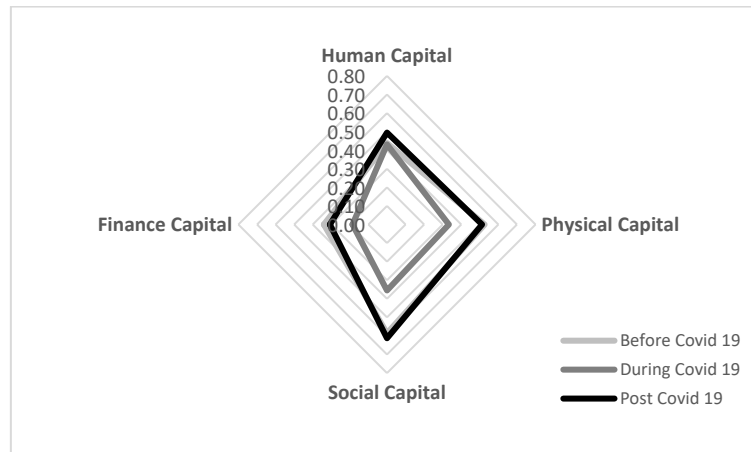


Figure 4. Cluster 3 Resilience Radar

Table 5. Livelihood Resilience Index for Cluster 3

Variabel	Indicator	Livelihood Resilience Index		
		Before Covid 19	During Covid 19	Post Covid 19
Human Capital	Motivation to Work	0.66	0.50	0.68
	Availability of Workforce	0.33	0.24	0.32
	Knowledge	0.24	0.40	0.49
	Skills	0.48	0.29	0.47
	Education	0.33	0.34	0.34
	Health	0.59	0.81	0.67
	Average	0.44	0.43	0.49
	Category	Moderate	Moderate	Moderate
Physical Capital	Place of Business	0.54	0.37	0.51
	Production Tools	0.53	0.35	0.52
	Market Access	0.51	0.28	0.50
	Average	0.53	0.33	0.51
	Category	Moderate	Low	Moderate
Social Capital	Business Network	0.44	0.29	0.44
	Trust	0.66	0.63	0.68
	Cooperation	0.66	0.14	0.72
	Average	0.59	0.36	0.61
	Category	Moderate	Low	High
Finance Capital	Financial Access	0.45	0.28	0.42
	Annual Turnover	0.16	0.04	0.15
	Income / day	0.44	0.15	0.37
	Expenses / month	0.20	0.16	0.20
	Savings	0.45	0.30	0.39
	Average	0.34	0.19	0.31
	Category	Low	Very Low	Low

Source: Author's Calculation, 2024

Comparison of Livelihood Resilience Index (LRI) Across Clusters

The analysis results indicate that the average resilience index values across clusters are relatively low. As shown in Table 6, the average resilience index for all clusters falls within the moderate category but lies close to its lower threshold. This suggest that, although each cluster demonstrates a moderate level of resilience, their resilience foundations remain weak, leaving them vulnerable to external shocks and pressures.

Table 6. Comparison of Average LRI Across Clusters

Lokasi	Before Covid 19	During Covid 19	Post Covid 19	Average	Category
Cluster 1	0.47	0.32	0.50	0.43	Moderate
Cluster 2	0.48	0.29	0.45	0.41	Moderate
Cluster 3	0.47	0.33	0.48	0.43	Moderate

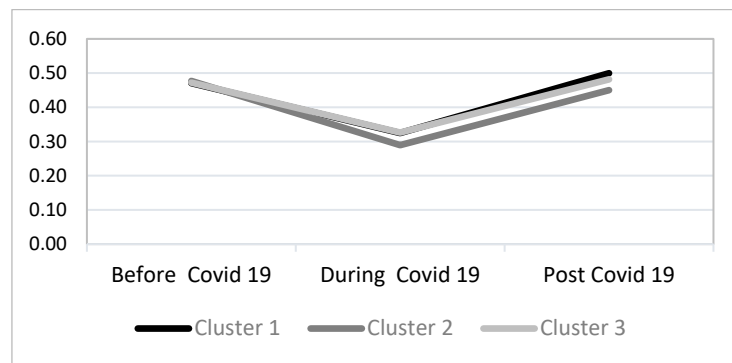


Figure 5. The Resilience of MSMES-Based Urban Kampongs In Response to COVID- 19

Figure 5 illustrates that during the COVID-19 pandemic, all clusters experienced a marked decline in resilience indices, falling into the low resilience category. In the post-pandemic period, Clusters 1 and 3 showed increases in their indices, though not significant when compared with pre-pandemic levels. In contrast, Cluster 2 recorded a further decline. These results suggests that ooverall adaptive and transformative capacities of the clusters remain relatively weak. This is reflected in the post-pandemic resiliience index values, which have either failed to surpass or only marginally exceeded their pre-pandemic levels.

DISCUSSION

This studies provides insights into the resilience of livelihoods in each cluster of urban kampongs based on the LRI assessment. In general, the LRI scores among clusters is relatively small, indicating no major differences in livelihood characteristics. While the average LRI value in all cluster falls within the moderate resilience category, each cluster demonstrates distinct strengths and

weaknesses across livelihood variables and their indicators. Among the four variables analyzed, only social capital in Clusters 1 and 3 reached the high resilience category in the post-COVID-19 period. The strong social capital in these clusters significantly contribute to livelihood resilience, aligning with Istanabi (2020), who emphasized the role of social capital in sustaining livelihood in urban kampongs. Trust and cooperation emerge as the strongest indicators, consistent with the identity of urban kampongs, which are characterized by high levels of social cohesion (Obermayr, 2017a). Previous studies also highlight the importance of social capital and local values in driving economic recovery, strengthening livelihood, and supporting the resilience of Small and Medium Enterprises (SMEs) (Branicki et al., 2018; Galarza-Villamar et al., 2024; Huggins & Thompson, 2015).

In contrast, physical capital and human capital fall within the moderate resilience category across all clusters. Although physical capital remains moderate, its index has improved compared with the pre-pandemic conditions. This improvements appears to be linked to location. Cluster 1, situated in Central Semarang—a hub for trade and services—offers locational advantages for MSME actors in urban kampongs. Previous studies (Lindarni et al., 2014; Setiawan et al., 2020) also emphasize the role of location in supporting business growth, which may explain the post-pandemic increase in Cluster 1's physical capital index.

Human capital likewise demonstrates moderate resilience across clusters. MSME actors in all clusters exhibit strong business motivation, and knowledge indicators also show improvement compared with pre-pandemic conditions. Notably, awareness of business diversification and digital technology has increased. Although these improvements not yet statistically significant, they signal important adaptation efforts. In particular, the rise in motivation and knowledge provides a strong foundation for strengthening livelihood resilience through MSME development. As Hadi and Rudiarto (2018) argue, human capital plays a central role in business growth and recovery. Branicki et al. (2018), studying SMEs in the UK, found that entrepreneurs' experiences in navigating difficulties and uncertainty foster resilience, which becomes the basis of MSME sustainability.

Financial capital, however, remains the weakest livelihood asset across all clusters, both before and after the pandemic. Conditions worsened during COVID-19, with all financial capital indicators falling into the low resilience category. Annual turnover was especially weak, reaching the very low category across all clusters. This finding resonates with previous research on livelihood resilience, which has largely examined the impacts of natural disasters such as floods on community livelihoods (Sulaiman et al., 2019; Galarza-Villamar et al., 2024; Insani et al., 2022; Sahoo & Sivaramakrishnan, 2024). These results

confirm that threats to livelihoods resilience may arise from diverse sources, including pandemics. However, limited studies have investigated resilience in the context of pandemics such as COVID-19. This study therefore contributes a fresh perspective by examining livelihood resilience beyond natural disasters, expanding the resilience discourse. Nevertheless, a limitation of this research lies in its focus on urban kampung contexts.

CONCLUSION

An examination of livelihood resilience indices across clusters reveals that Cluster 1 has a higher resilience index, followed by Cluster 3 and Cluster 2. Although all clusters fall into moderate resilience category, indicating adequate capacity to withstand external shocks and pressures, they remain vulnerable. This underscores the need to strengthen the livelihood capital of urban kampung to enhance their ability not only to absorb and recover from external shocks but also to adapt and transform beyond pre-crisis conditions. Considering that urban kampongs have an important role in the dynamics of the economy in the city center, as a recommendation, the Semarang City Government and urban planners need to facilitate the strengthening of community livelihoods through policy support that focuses more on increasing the livelihood resilience in urban kampongs. Support for increasing livelihood capital through capacity-building activities will have a good impact on increasing livelihood resilience in urban kampongs.

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DISCLOSURE STATEMENT

All authors have no conflicts of interest to declare.

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