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Navigating urban informality: Fatalism, agency, and governance dynamics in Banjarmasin's inland waterway transport sector

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ABSTRACT

This study explores the interplay of urban informality, fatalism, and governance within Banjarmasin's Inland Waterway Transport (IWT) sector in Indonesia. It reinterprets fatalism, commonly viewed as passive acceptance, as a form of resilience that enables kelotok drivers to navigate economic uncertainties. Using qualitative interviews and field observations, and set against the backdrop of the COVID-19 pandemic, this research uncovers how fatalistic beliefs rooted in Islamic values guide drivers in confronting socio-economic adversity with both acceptance and agency. Fatalism shapes the drivers' adaptation strategies to declining ridership and limited formal employment opportunities, offering a psychological and cultural framework for resilience. The study also highlights informal governance mechanisms, such as community solidarity and self-regulation, which help drivers negotiate their position in the informal economy despite the absence of formal support. By unpacking the intersections between cultural beliefs, economic challenges, and governance structures, this research provides a deeper understanding of urban informality. It calls for governance approaches that are more culturally sensitive and responsive to the realities of informal workers, contributing to discussions on urban informality, governance, and worker resilience in evolving urban environments.

Introduction

Urban informality continues to present a significant challenge to cities worldwide, reflecting deeper systemic inequalities, regulatory shortcomings, and socio-economic disparities (Harris 2018). This phenomenon has garnered significant attention from scholars and policymakers due to its multidimensional impact on urban development, governance, and socio-economic stability. Informality underscores existing inequalities and complicates efforts towards sustainable development, inclusive growth, and equitable access to essential services (de Satgé & Watson 2018; Skinner & Watson, 2020). Understanding the underlying dynamics that drive urban informality, particularly the agency and resilience of informal workers, is therefore crucial (Portes & Haller 2005).

While substantial scholarly attention has been devoted to understanding the proliferation and persistence of informal economies within urban contexts (Rothenberg et al. 2016; Portes & Haller 2005; Hart 1973), a dimension that remains underexplored is the agency and resilience of informal workers who actively navigate and shape their informal livelihoods (Raj-Reichert 2023; Roy 2005; Rekhviashvili & Sgibnev 2018). This article addresses this gap by delving into the complex interplay between agency and fatalism, particularly in Banjarmasin's inland waterway transport (IWT) sector, where the traditional riverboats known as *kelotoks* are central to local transport.

Traditionally, 'informality' is understood as referring to workers operating outside formal regulations and taxation systems. However, in Banjarmasin's IWT sector, informality involves more complex socio-economic and cultural dynamics. Even when drivers achieve entrepreneurial success, they remain outside formal governance structures and lack institutional recognition, reflecting a broader informality that transcends economic precariousness. The *kelotok* sector has historically operated in these informal spaces, fulfilling both economic and cultural roles in the city's daily transport needs. The complexity of this case arises from the intersection of informality with Banjarmasin's historical dependence on water-based transport, which continues to carry cultural significance even as formal transport alternatives emerge. This highlights the dual role of *kelotoks* within the urban environment's economic and cultural dimensions (Fig. 1).

A central concept in this study is fatalism, which has traditionally been viewed as a barrier to progress. Defined as the belief that events are predetermined and beyond individual control, fatalism is often seen as an impediment to agency and self-determination, particularly in health-related and public policy contexts (Straughan & Seow 1998;

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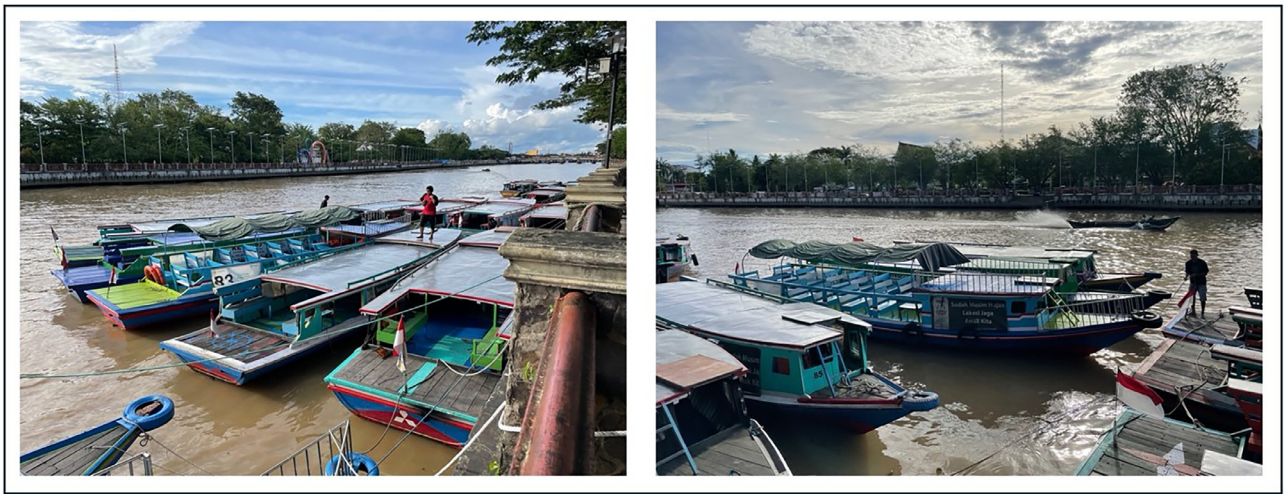

Fig. 1. Kelotok boats of different models docked along Banjarmasin's inland waterways, symbolising the cultural and economic resilience of the informal IWT sector. Despite modernisation pressures and declining ridership, kelotok drivers continue to operate in these informal spaces, reflecting the intersection of historical tradition, religious beliefs, and the challenges posed by urban governance. These images depict not just a mode of transport, but a livelihood and cultural heritage that remains integral to the socio-economic fabric of Banjarmasin. (Source: Photo by Dadang Utomo, October 2022).

Ayala et al. 2023). Commonly associated with passivity and resignation, particularly in religious communities (Baytiyeh & Naja 2016), fatalism is reinterpreted in this study as a culturally embedded strategy for resilience. In contexts shaped by strong religious and cultural beliefs, fatalism intertwines with these worldviews and values, influencing how individuals navigate governance structures and economic uncertainty. By framing fatalism as a coping mechanism that supports resilience, rather than undermining it, this study offers a fresh perspective on the dynamics of urban informality (Kosunen & Hirvonen-Kantola 2020). The impact of the COVID-19 pandemic has further highlighted the resilience of informal workers, who, despite facing severe disruptions, continue to sustain their livelihoods amidst ongoing uncertainties.

This article asks the following question, "How does fatalism influence the resilience strategies, perceptions of governance structures, and interactions with formal regulations among kelotok drivers in Banjarmasin's IWT sector?" By viewing fatalism not as a barrier but as a cultural resource, this study reassesses how it shapes the socio-economic strategies and governance engagement of informal workers. We argue that fatalism, deeply rooted in religious and cultural beliefs, operates alongside agency as a framework through which workers navigate governance structures and economic challenges. Ultimately, this study reveals an often-overlooked aspect of urban mobility: informal workers' voluntary and culturally motivated agency. This reconceptualisation of urban informality challenges deterministic narratives that position informal workers as passive victims of socio-economic constraints. Instead, it emphasises the autonomy and resilience of informal workers, enriching discussions on informality, governance, and resilience. By offering new perspectives on how fatalism shapes resilience strategies, the study provides insights that can inform culturally sensitive governance policies responsive to the lived experiences of informal workers.

Fatalism, agency, and governance in urban informality: A thematic review

This review critically examines the intersections of fatalism, agency, and governance within urban informality. These themes are central to understanding the lived experiences of informal workers, particularly in culturally complex and economically marginalised sectors like Banjarmasin's IWT. By focusing on these dynamics, the review contributes to a more nuanced understanding of how informal workers navigate socio-economic challenges.

Understanding fatalism in urban contexts

Fatalism, a concept extensively explored across disciplines like psychology and sociology, typically refers to the belief that events are predetermined and beyond individual control (Chen et al. 2018; Ramírez & Carmona 2018). Traditionally associated with resignation and passivity, particularly in religious contexts (Baytiyeh & Naja 2016), fatalism influences perceptions of agency and decision-making processes. While often framed as an impediment to proactive engagement, this study reframes fatalism as a culturally embedded strategy for resilience, especially within urban settings shaped by informal economies.

Existing literature on fatalism has primarily focused on its role in health and public policy, leaving a gap in understanding how it influences the strategies of informal workers in urban contexts, such as Banjarmasin's inland waterway transport (IWT) sector. Kosunen and Hirvonen-Kantola (2020) contribute to this discourse by emphasising fatalism's role in co-evolutionary urban planning, where it helps individuals adapt to uncertain environments. While their work offers valuable insights, it predominantly focuses on developed contexts, highlighting the need for further exploration in informal economies characterised by socio-cultural complexities.

Agency and resilience of informal workers

Agency within urban informality refers to the capacity of individuals and communities to act autonomously and make decisions, despite the constraints imposed by their socioeconomic environment (Banks et al. 2020). Resilience, in turn, pertains to their ability to recover from socio-economic adversities and adapt to changing circumstances (Sharifi 2020). Informal workers demonstrate agency through various means, such as entrepreneurial initiatives, collective organising, and navigating systemic barriers like restrictive regulations, economic inequalities, and limited social protection (De Soto 2000). However, institutional barriers, including lack of social protection and restrictive policies, further hinder their ability to assert rights and negotiate equitable working conditions (De Soto 2000). Resilience strategies, such as leveraging social networks and diversifying income streams, are essential for mitigating risks and adapting to shifting market dynamics (Chen 2012).

Critiques of traditional perspectives on agency argue that the emphasis on economic productivity and efficiency often overlooks the sociocultural motivations and constraints that shape informal work-

ers' actions (Zion-Waldoks, 2014). Such narrow interpretations obscure the collective forms of agency and solidarity that underpin many resilience strategies in informal settings. A broader conceptualisation is necessary to reflect the complexity of these workers' lived experiences. Yunisvita et al. (2022) also explore the socioeconomic determinants that affect informal workers' income, finding that these determinants extend beyond economics to include social networks and community ties. Their research suggests that informal workers often navigate their economic realities through collective strategies that reflect their sociocultural contexts, challenging the traditional view of agency, which tends to prioritise individual economic outcomes.

Similarly, Rahman et al. (2023) investigate the well-being of informal workers in Bangladesh, demonstrating how socio-cultural factors shape their livelihoods and resilience strategies. Their findings reveal that informal workers often depend on community support and social capital to cope with economic challenges, indicating that their agency is deeply intertwined with their social environments.

Urban informality: Concepts and debates

Urban informality refers to a wide range of activities that occur outside formal regulatory frameworks, including street vending, informal settlements, and unregulated services. These informal activities often arise in response to systemic inequalities and provide survival strategies for those excluded from formal economies (Recio 2022; Dovey et al. 2022). While the informal economy can foster resilience and innovation among marginalised populations, it also exacerbates social inequalities and environmental issues (Ahlers et al. 2014).

Scholars have debated the role of governments in addressing urban informality. Some argue that exclusionary urban policies perpetuate informality by pushing marginalised groups outside formal economic systems. Others advocate for formalisation to provide informal workers with access to essential services and legal protections (Hart 1973; Roy & AlSayyad 2004). However, formalisation efforts often fail to account for the socio-cultural factors shaping the experiences of informal workers, especially in sectors such as transport, where informality offers flexibility and autonomy.

Governance gaps in addressing informality have also been noted, with fragmented approaches failing to consider the socio-cultural contexts that influence workers' resilience strategies (Khan & Mishra 2022). For instance, in informal economies like Banjarmasin's IWT sector, drivers' decision-making is deeply shaped by religious beliefs and cultural norms, particularly fatalism. This challenges conventional formalisation efforts, which tend to focus on regulatory solutions without addressing these underlying cultural dimensions (Hsu et al. 2015).

Governance dynamics in urban informal settings

Governance in urban informal settings highlights the tension between formal regulatory structures and the lived realities of informal economies. Scholars like De Soto (2000) note that the absence of legal recognition marginalises informal workers, limiting their access to social protection and essential services (Straughan & Seow 1998). In Banjarmasin's IWT sector, kelotok drivers operate outside formal regulatory frameworks, compounding their marginalisation. These governance systems often fail to account for the socio-cultural realities, such as the religiously influenced fatalism that influences informal workers' resilience strategies.

Emerging examples of participatory governance suggest pathways to mitigate these challenges. Proponents such as Adeosun et al. (2023) highlight the value of involving informal workers in decision-making processes. For instance, integrating kelotok drivers' perspectives into governance frameworks could lead to regulations that align with their cultural and economic realities. Similar participatory governance succeeded in other informal sectors, like food vending associations, where worker involvement leads to more effective and responsive policies (Adeosun et al. 2023).

The experiences of innovative governance models such as Barcelona's Superblocks further exemplify the potential of human-centred approaches. The Superblocks initiative demonstrates how prioritising inclusivity and ecological transitions can reshape urban environments to better address community needs (Camerin 2023). By reorganising public spaces to support social interaction and environmental health, Superblocks reflect how participatory planning fosters resilience and inclusivity. Such approaches could inspire governance reforms in Banjarmasin's IWT sector by recognising the socio-cultural contributions of kelotok drivers and involving. Them in decision-making processes.

However, institutional resistance and entrenched power dynamics often obstruct efforts to integrate informal economies into formal systems. Granados et al. (2022) observe that power imbalances perpetuate the socio-economic precarity of informal workers. Neoliberal policies, which frequently prioritise formal economic activities, further marginalise groups like kelotok drivers (Campbell et al. 2014; Rizzo 2011). Addressing these barriers requires governance systems to balance stability and flexibility. As Beunen et al. (2017) argue, governance resilience depends on the ability to maintain stability while adapting to social and environmental changes. Institutional work, which involves creating, maintaining, and disrupting institutional structures, provides a framework for achieving this balance (Beunen et al. 2017). For Banjarmasin's IWT sector, such an approach could integrate cultural values and operational realities while fostering trust and accountability.

Despite these challenges, the recognition of informal worker associations or cooperatives offers promising solutions (Cao 2022). These structures can improve service delivery, access to resources, and resilience while respecting the Click or tap here to enter text.cultural and economic contributions of informal workers (Masuku 2023). Institutional strategies that incorporate stability and flexibility not only enhance governance frameworks but also foster more equitable urban development.

Ultimately, context-sensitive approaches to managing urban informality must prioritise socio-political dynamics and cultural nuances. As Meagher (2010) notes, responsive governance frameworks must integrate the voices of informal workers. For Banjarmasin's kelotok drivers, this involves fostering governance models that respect their agency while addressing systemic inequities. By drawing lessons from participatory initiatives like Superblocks and applying principles of institutional work, Banjarmasin can develop governance systems that bridge the gap between formal and informal urban systems.

Intersectionality of fatalism, agency, and urban informality

The interaction between fatalism and agency in urban informality presents a nuanced dynamic, particularly in socio-religious contexts like Banjarmasin's IWT sector. Fatalism, traditionally viewed as opposing agency, can instead shape informal workers' decision-making by influencing how they perceive risk and opportunity (Chen et al. 2018). However, in this study, fatalism is reinterpreted as a framework that complements agency, enabling workers to navigate uncertainty and maintain resilience in the face of socio-economic challenges. This reinterpretation is particularly relevant in informal sectors like the IWT, where religious and cultural beliefs play a central role in shaping economic behaviours and governance interactions.

Fatalistic beliefs significantly inform resilience strategies among informal workers. Kelotok drivers often view economic hardships as part of a divine plan, helping them cope with challenges like declining ridership and limited government support. This aligns with Naicker et al. (2021) who argue that fatalistic attitudes shape how workers respond to socio-economic difficulties and interact with governance structures. In the IWT sector, fatalism fosters an acceptance of hardships, but it also empowers drivers to persist in their work despite their marginalised position in the formal economy. While fatalism can lead to passive acceptance of challenging conditions, it also serves

as a coping mechanism that encourages resilience. Ramírez and Carmona (2018) suggest that fatalistic beliefs, rather than being detrimental, help individuals endure economic uncertainty, a perspective crucial to understanding how kelotok drivers adapt to their difficult socio-economic environment.

Despite the significant role of fatalism, informal workers in Banjarmasin's IWT sector continue to assert their agency, particularly through collective action and community solidarity. Collective agency, common in low-income urban settings like Banjarmasin, enables informal workers to mobilise social networks and advocate for better conditions (Mattis et al. 2008). This is evident among kelotok drivers who form informal cooperatives to negotiate with local authorities, especially in tourism initiatives. Through such collective agency, workers assert their rights and sustain their place within the informal economy.

Moreover, Bucur (2023) argues that informed decision-making can empower individuals to challenge restrictive fatalistic narratives. Younger kelotok drivers, for example, adopt more pragmatic strategies by engaging in entrepreneurial risk-taking and using digital platforms to access information, which reflects an evolving balance between fatalism and agency. While religious beliefs remain central to their worldview, younger drivers increasingly embrace adaptive behaviours to improve their economic prospects, highlighting a broader shift within the informal economy.

Incorporating these perspectives into discussions of resilience and governance broadens the discourse on how informal workers navigate the complexities of urban informality. The intersection of fatalism and agency reveals a more complex landscape, where informal workers assert autonomy while grappling with socio-economic constraints shaped by cultural beliefs and governance structures. This dynamic highlights the need for governance frameworks that not only address economic realities but also recognise the socio-cultural dimensions that influence informal workers' strategies. As this literature suggests, understanding the interplay between fatalism and agency is essential for developing policies that support the well-being and resilience of informal workers in culturally informed ways.

Methodology

In exploring the interrelation between fatalism, resilience, and governance in Banjarmasin's IWT sector, a qualitative research approach was employed. This approach allows for a deep exploration of kelotok drivers' lived experiences, enabling a rich understanding of how informal workers navigate socio-economic challenges (Starman 2013). In transport research, qualitative methods provide insights that complement the predominance of quantitative approaches, offering a more nuanced perspective on cultural influences and decision-making processes (Richardson 2001). The qualitative approach used in this study is especially suited to examining the complex motivations and coping strategies of workers in the informal transport sector, such as Banjarmasin's kelotok drivers (Creswell & Poth 2016).

Case study selection

The city of Banjarmasin, located in the South Kalimantan province on the nation's island side of Borneo, was selected as the primary case study for its historical significance and ongoing reliance on IWT despite the growing prevalence of modern transport systems. Banjarmasin's geographical and cultural context offers a unique lens through which to examine the dynamics of urban informality, resilience, and governance, particularly within archipelagic and riverine cities. The city's location at the confluence of the Barito and Martapura Rivers has long positioned it as a critical hub for waterborne trade, commerce, and transport across Indonesia (Dove 2011) (Fig. 2). Historically, these waterways have played a central role in shaping Banjarmasin's economy, society, and urban infrastructure.

Although Banjarmasin's IWT sector has experienced a decline in ridership due to the rise of alternative modes of transport (Yulianus 2014), the sector remains an important component of the city's informal economy. The kelotok boats, which serve as Indigenous modes of transport, embody both the cultural heritage and economic livelihood of the city's river communities (Utomo & Mateo-Babiano 2015). Kelotok drivers, operating within the informal economy, represent a community group whose resilience and agency are tested by both urban modernisation and the shifting transport landscape.

Furthermore, Banjarmasin's relevance to broader discussions of urban informality in archipelagic regions was also the reason for this case study selection. The persistence of informal IWT in Banjarmasin, despite modernisation pressures, provides valuable insights into the intersection of traditional livelihoods and informal economies in similar settings across Southeast Asia. Understanding how *kelotok* drivers navigate the socio-economic challenges of operating in an increasingly formalised urban environment, thus, highlights critical themes of resilience, governance, and cultural adaptation. While this case is specific to Indonesia, the insights gained can be applied to other archipelagic and riverine cities, where informal economies and traditional transport systems face similar pressures from urbanisation and modernisation.

Sampling and participant selection

The population of interest in this study consists of kelotok drivers who primarily operate in Banjarmasin's IWT sector. These drivers were selected based on their involvement in the *Wisata Susur Sungai* (WSS) program and broader informal transport operations in the city. While specific accident rates or mortality statistics are not readily available, the drivers were chosen for their socio-cultural significance and representation of the informal transport economy, rather than their deviation from standard safety or formal monetary measures. This population represents a key aspect of Banjarmasin's river-based transport system, offering insights into how informal workers maintain resilience and navigate governance structures.

Participants in this study were purposively selected to ensure a diverse representation of experiences and perspectives within the kelotok driving community in Banjarmasin. Purposive sampling was employed due to its effectiveness in targeting individuals who possess specific knowledge and experience relevant to the study's focus on urban informality and resilience (Creswell & Poth 2016). This method allowed us to select participants based on their active engagement in the IWT sector, which was critical to gaining in-depth insights into their lived experiences.

The sampling process relied on the membership records of the 'Koperasi Maju Karya Bersama,' a local cooperative representing 88 *kelotok* drivers authorised for Banjarmasin's river cruise program, '*Wisata Susur Sungai*.' Participants were initially approached through the cooperative, and further recruitment was facilitated through snowball sampling, where initial participants recommended others within the community who could offer valuable perspectives. This ensured that a wide range of viewpoints, particularly from drivers with differing lengths of experience and operational roles, were captured.

Between April and December 2020, 22 kelotok drivers were interviewed. This sample size was deemed sufficient based on the principle of data saturation, where no new themes were emerging from additional interviews (Guest et al. 2006). The participants reflected a mix of age groups, backgrounds, and operational roles within the IWT sector. The majority were male drivers aged 50 and above, while younger drivers in their early 20s were also included to capture generational perspectives on resilience and governance. In addition to local residents, the sample included drivers who had migrated to Banjarmasin from surrounding regions, providing a broader understanding of how non-local factors influence participation in the informal transport economy.

The purposive approach also ensured that both *kelotok* owners and drivers employed by third-party owners were represented, allowing the

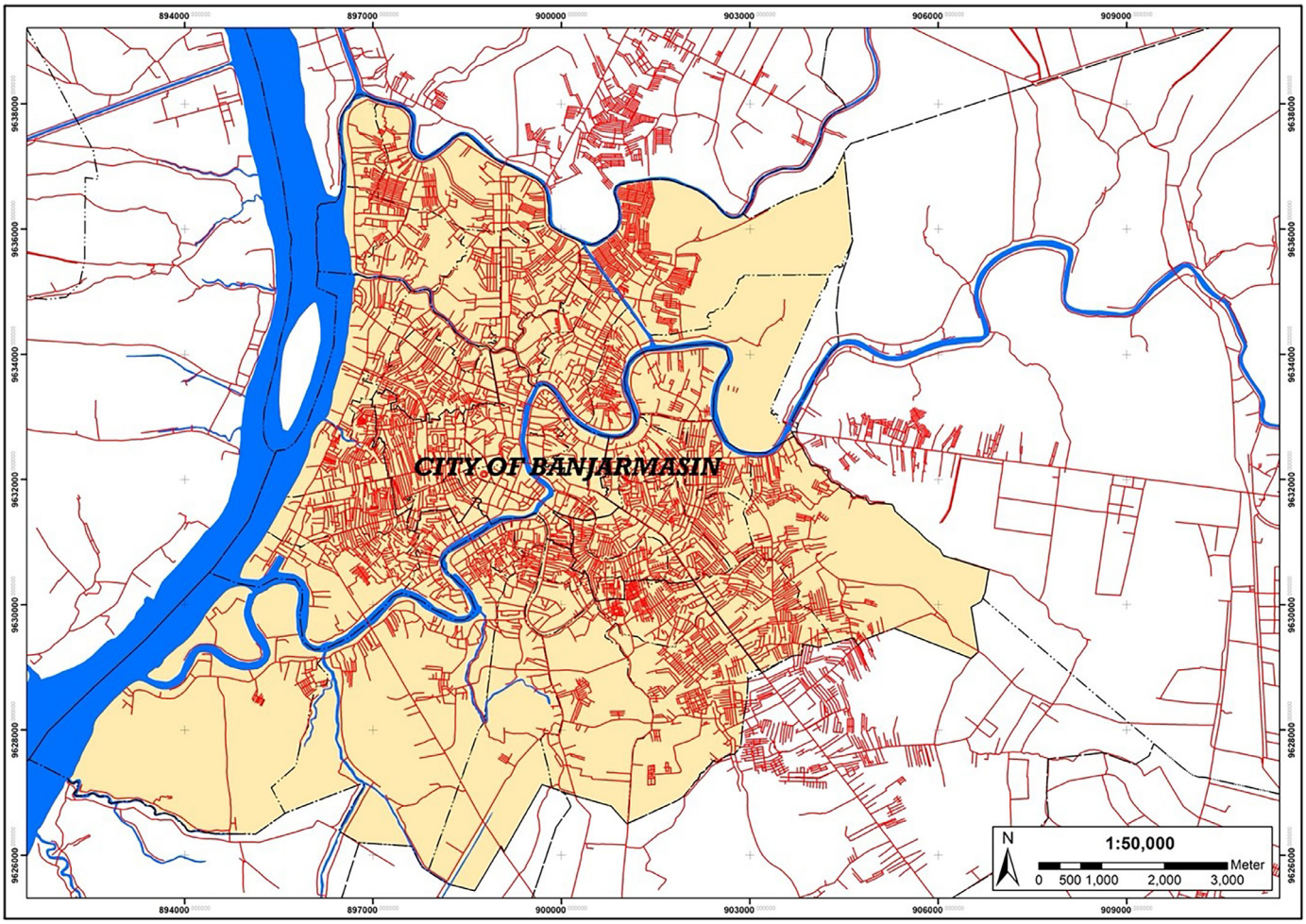

Fig. 2. Map of Banjarmasin, highlighting the city's network of inland waterways, including the Martapura River, which serves as the main route for the Wisata Susur Sungai (WSS) boats. Due to rapid urban development, many smaller rivers have become unnavigable, restricting the operation of larger kelotok boats to the Martapura River. Smaller boats still navigate the narrower waterways, maintaining vital transport links for the local population. (Source: Banjarmasin city planning archives, 2020).

study to explore different experiences within the sector. This diversity (Cervero 2000; Rizzo 2011) was critical in examining how resilience strategies and interactions with governance structures varied depending on participants' positions within the IWT industry.

Data collection

Data for this study were collected in two phases due to the constraints imposed by the COVID-19 pandemic. The initial phase took place between April and December 2020, during which remote data collection methods were employed due to travel restrictions. Semi-structured interviews were conducted with kelotok drivers via phone and digital platforms, focusing on their experiences, resilience strategies, and perceptions of governance during the pandemic. These interviews provided detailed qualitative data on the socio-economic challenges and adaptive strategies employed by informal workers in Banjarmasin's IWT sector.

The interviews were semi-structured, consisting of predefined open-ended questions designed to explore the drivers' experiences, challenges, and coping mechanisms. Below are examples of the structured questions used, with follow-up questions developed organically based on the respondents' answers:

- *Can you describe your daily routine as a kelotok driver?*
- *What are the main challenges you face in your work?*
- *How do you navigate changes in demand, particularly during the pandemic?*
- *How do you view the relationship between your work and formal governance structures, such as cooperatives or government regulations?*

The second phase of data collection occurred in 2022, following the easing of travel restrictions, allowing for in-person fieldwork in Banjarmasin. This phase involved ride-along interviews with kelotok drivers along the Martapura River, which served to verify the data collected remotely. These ride-along interviews enabled direct observation of the operational dynamics of the kelotok system and its interaction with other informal transport services. Additionally, the fieldwork provided an opportunity to assess the current navigability of the waterways, many of which are now only accessible by smaller boats due to modernisation pressures and shrinking channels (Fig. 3).

As co-authors, the researchers bring complementary perspectives to this study. The first author, although not originally from Banjarmasin, shares the Islamic values and cultural understanding that are central to the study. This perspective, combined with academic expertise in urban informality and governance, provides a balanced approach to interpreting the data. The shared cultural understanding allows for nuanced insights, while professional distance ensures objectivity in the analysis. However, awareness of potential biases was maintained throughout the research process to ensure the findings were empirically grounded.

Fig. 3. Fieldwork verification through ride-along interviews with kelotok drivers along the Martapura River, Banjarmasin, conducted in 2022 (left). One of the key terminals where interviews were held, highlighting the interaction between the kelotok system and other informal operators, such as motorcycle taxis 'ojek' drivers (right). (Source: Photo by Dadang Utomo, October 2022).

Data analysis

The qualitative data collected through interviews were subjected to thematic analysis to identify recurring patterns, themes, and insights within the narratives of *kelotok* drivers (Braun & Clarke 2006). Thematic analysis was employed to identify patterns and recurring themes within the interview data. This process involved several stages: initial coding to categorise data based on recurring concepts, followed by deeper interpretation to uncover underlying meanings related to fatalism, agency, and resilience. Throughout the analysis, the research team engaged in regular discussions to refine and validate emerging themes, ensuring consistency with the research questions. Ongoing data collection allowed for the iterative adjustment of themes, ensuring that new insights were incorporated into the analysis framework as they emerged.

Limitations of the study

This study offers valuable insights into the governance, resilience, and cultural dynamics of Banjarmasin's IWT sector, but it is important to acknowledge its limitations. One significant aspect is the cultural proximity of the first author to the participants, which facilitated trust and deeper engagement during data collection. While this cultural familiarity enriched the qualitative findings, it may also have influenced the interpretation of the data, potentially overemphasising shared values while underrepresenting conflicting perspectives. To address this, collaborative analysis with the co-author and regular validation discussions were employed to ensure balanced and empirically grounded interpretations.

The study's focus on Banjarmasin provides a deep understanding of its socio-cultural and economic specificities but may limit the generalisability of findings to other riparian and archipelagic cities. The unique cultural and geographical characteristics of Banjarmasin's IWT sector mean that the findings reflect a specific context that may not directly apply elsewhere without adaptation.

Another limitation relates to the representation of gender dynamics in the IWT sector. While purposive sampling ensured diversity in generational and operational roles, the sample predominantly consisted of male drivers, reflecting the sector's gendered nature. Although some women are involved in supporting roles, such as ticket sellers or terminal managers, their voices were not included in the study. Additionally, one female kelotok driver was identified during the fieldwork, but cultural considerations regarding her advanced pregnancy and the appropriateness of a male researcher conducting interviews without her husband's presence prevented further engagement. Including female participants could have offered a richer perspective on how gender intersects with fatalism, agency, and resilience within the IWT sector.

Acknowledging these limitations highlights the challenges of conducting qualitative research in culturally nuanced and informal settings. These considerations underscore the importance of complementing this work with additional studies that address underrepresented perspectives and contexts.

Empirical findings: Insights from kelotok drivers in Banjarmasin's inland waterway transport

This section presents the key findings from the interviews conducted with *kelotok* drivers in Banjarmasin's IWT sector. These findings reveal a complex interrelation between religious beliefs, particularly fatalism, and the drivers' economic resilience and adaptive strategies in response to declining ridership and broader socio-economic challenges. The drivers' perceptions of governance, as well as their strategies for negotiating their marginalised position within the informal economy, are explored in detail. By examining how cultural factors such as fatalism shape their coping mechanisms and interactions with governance structures, the findings provide deeper insight into the ways in which informal workers navigate the pressures of urban modernisation and economic exclusion. Three key themes emerge from the data: the intersection of economic and cultural dynamics, the drivers' resilience strategies, and their interactions with formal and informal governance systems. Each theme is discussed in detail, highlighting the drivers' diverse responses to the challenges they face in their daily work.

Cultural fatalism as a framework for resilience

Cultural fatalism plays a pivotal role in how kelotok drivers in Banjarmasin's IWT sector develop resilience in the face of socioeconomic challenges. Often conceptualised as passive acceptance, fatalism within this context functions as an empowering belief system that aids informal workers in enduring hardship and uncertainty. Deeply rooted in Islamic teachings, fatalism provides drivers with a framework that not only stabilises their psychological outlook but also helps them navigate the uncertainties of the informal economy.

In the context of modernisation and declining ridership in the IWT sector, where formal employment opportunities are scarce, fatalism provides a way for kelotok drivers to reinterpret socio-economic pressures. Rather than viewing these challenges as personal failures, they see them as part of a divine plan. For senior drivers, their economic struggles are viewed as spiritually significant, a test of faith that they are destined to endure. This perspective, as one driver explained, reflects the belief that *"God determines our sustenance, so it's not for us to worry about*

money—God will provide." Such statements illustrate how fatalism helps alleviate the pressures of economic precarity, offering a sense of control amidst external uncertainties.

While fatalism promotes acceptance, it does not negate action. Instead, it functions as an adaptive strategy, especially when formal government support is lacking. Older drivers continue to work despite the declining demand, driven by the belief that their work is not just an economic activity but also a divine duty. This duty, framed by their Islamic faith, encourages them to maintain their involvement in the informal IWT sector, ensuring that their cultural identity and livelihoods remain intact. For instance, Ian, a kelotok driver, explained that from a young age, he was taught—and now teaches his own sons—that providing sustenance for one's family is the prime duty of a man, as Islam instructs. This belief that his work fulfils a religious obligation reinforces his commitment to continue driving kelotoks, despite the economic hardships.

For younger drivers, fatalism is coupled with entrepreneurial strategies. Although they accept that God's will ultimately determines the success or failure of their efforts, they are more inclined to take risks by diversifying their income streams or launching small-scale businesses. Fatalism, in this sense, acts as both a psychological buffer and an enabler of pragmatic decision-making, allowing them to explore alternative economic opportunities without fear of failure. As Budiman, a younger driver, noted, *"Whether my business succeeds or fails, it's all in God's hands—but I will still try my best."*

Reinterpreting fatalism as a form of resilience offers a fresh perspective on its role in informal economies. In Banjarmasin's IWT sector, where modernisation pressures threaten traditional transport systems, fatalism provides a cultural safety net that fosters patience, hope, and psychological stability. This worldview enables kelotok drivers to endure socio-economic struggles and persist in their work despite exclusion from formal governance structures. For example, Gazali, a kelotok driver, accepted his exclusion from *Koperasi Maju Karya Bersama*—a cooperative that offers economic advantages—by expressing trust in divine providence. He remarked, *"I do not mind being outside the cooperative, even if it means I cannot access the three major terminals. I believe God will help me go through this economic difficulty."* Gazali's decision reflects how fatalism provides him with a sense of peace and resilience, allowing him to continue his work with the belief that his sustenance is part of a larger divine plan. This interplay between fatalism and agency enables informal workers to sustain their economic livelihoods while preserving their cultural identity. Fatalism, in this context, functions not as a passive barrier but as an active resource that empowers drivers to navigate socio-economic challenges with a sense of purpose and stability.

Economic challenges and the flexibility of the informal sector

The informal IWT sector in Banjarmasin demonstrates a remarkable ability to adapt to economic challenges, particularly as the pressures of modernisation and fluctuating demand reshape the city's transport landscape. *Kelotok* drivers, who have historically depended on river-based transport, now find themselves operating in an environment where land-based alternatives are becoming more dominant. Despite this shift, the flexibility inherent in the informal sector enables these drivers to adjust their economic strategies and continue earning a livelihood. The COVID-19 pandemic, in particular, brought these challenges to the forefront as the already declining ridership worsened, creating a sense of urgency for drivers to diversify their income sources. This unprecedented crisis underscored the need for adaptability, pushing many drivers to seek alternative forms of informal work or supplement their income through small-scale entrepreneurship.

Although detailed economic data on the kelotok sector is difficult to obtain due to its largely informal nature, the Wisata Susur Sungai (WSS) program is Banjarmasin's largest tourist attraction, drawing thousands of tourists annually. This underscores the significant cultural and economic contributions of kelotok drivers to the local economy, despite the absence of formal data on their financial impact. These drivers are integral to maintaining the city's cultural and economic vibrancy, providing not just transport but also cultural experiences for tourists.

Kelotok drivers have responded to these economic pressures in a variety of ways. Many have found opportunities in other informal jobs or have supplemented their income through small-scale entrepreneurship. Younger drivers are particularly attuned to these strategies, viewing their participation in the IWT sector not just as a primary job but as part of a broader portfolio of informal economic activities. For example, some younger drivers, like Budiman, have ventured into side businesses such as mechanics or goods delivery, using their *kelotok* boats to transport items rather than passengers. As Budiman explained, *"Whether my business succeeds or fails, it's all in God's hands—but I will still try my best."* His statement reflects how the flexibility of the informal sector, combined with the cultural backdrop of fatalism, allows workers to take calculated risks without the fear of failure that might otherwise inhibit entrepreneurial ventures. This pragmatism, paired with a belief in divine will, helps drivers navigate the uncertainty of the informal economy.

The economic adaptability of *kelotok* drivers is not limited to younger generations. Older drivers, too, have found ways to adjust their operations in response to declining demand. Although their deep-rooted cultural and religious beliefs often prevent them from completely abandoning the kelotok driving profession, many have diversified within the sector itself. Akbar, a senior *kelotok* driver, recounted how he managed several boats for various purposes during the height of river-based transport, using them not only to ferry passengers but also for fishing and distributing oil. While the rise of modern infrastructure has diminished these opportunities, Akbar continues to operate with a similar mindset, adjusting his services to suit the current demand. His approach reflects the deep economic flexibility that is characteristic of the informal sector, where the absence of rigid regulations allows for the seamless blending of different types of work.

The intergenerational transmission of values and knowledge is another critical aspect of the IWT sector's resilience. For many drivers, including Ian, the work is not simply about economic survival; it is a cultural duty deeply tied to Islamic beliefs. Ian explained how, as a young boy, he was taught by his father that providing sustenance for the family is a man's prime duty, a lesson rooted in Islamic teachings. Now, Ian passes this same belief to his sons, teaching them that the work they do is not just a way to earn a living but a fulfilment of their religious obligations. This cultural continuity ensures that younger generations of kelotok drivers are imbued with the same sense of duty and resilience, enabling them to navigate the socio-economic challenges of the informal economy with a strong moral and religious foundation.

This adaptability is further illustrated by the informal nature of skills acquisition within the IWT sector. The *kelotok* drivers learn their trade through autodidactic means, with skills and knowledge passed down through family members and social networks. Unlike formal employment sectors, which often require certifications or specialised education, the *kelotok* industry thrives on its accessibility and flexibility. This lack of formal training requirements has long been a cornerstone of the informal sector's resilience, particularly in communities where access to formal education and employment is limited. For many senior drivers, continuing to work as kelotok operators is a matter of both economic survival and cultural continuity, as their identity is inextricably linked to the river and the traditions it upholds.

However, the same informality that facilitates flexibility also introduces significant vulnerabilities. Drivers who operate outside formal regulatory frameworks are excluded from social protection measures, such as health insurance or retirement benefits, which leaves them more exposed to external shocks. This is particularly evident in the aftermath of the COVID-19 pandemic, which exacerbated the socio-economic challenges faced by the IWT sector. The drivers' resilience in this context has largely depended on their ability to form informal networks of support within the community. During the pandemic, many drivers pooled their resources, sharing food, money, and supplies to ensure that no one was left without basic necessities. Such collective solidarity is a key feature

of the informal sector's resilience, providing an informal safety net in the absence of government intervention.

Moreover, the flexibility of the informal economy is often a double-edged sword. While it allows for quick adjustments and entrepreneurial ventures, it also perpetuates instability and precarity. The lack of regulatory oversight means that drivers are vulnerable to market fluctuations and have little protection against exploitation or unsafe working conditions. As the formalisation of certain aspects of the IWT sector—such as the development of tourism programs like *Wisata Susur Sungai*—begins to encroach upon the informal practices of kelotok drivers, many are forced to navigate the delicate balance between maintaining their autonomy and participating in more formalised economic activities. This tension highlights a critical challenge faced by informal workers: the need to remain flexible and adaptable while also seeking the stability and protections that formal governance structures might offer.

Ultimately, the economic challenges faced by *kelotok* drivers illustrate the dual nature of the informal sector's flexibility. On the one hand, it allows workers to navigate socio-economic pressures with relative ease, providing the space for entrepreneurial risk-taking and adaptive strategies. On the other hand, it reinforces the precariousness of their livelihoods, as the lack of formal protections leaves them vulnerable to external shocks, such as pandemics or modernisation pressures. The ability of *kelotok* drivers to adjust their economic strategies, diversify their income streams, and rely on community support underscores the resilience of the informal sector but also points to the limitations of this flexibility when it comes to securing long-term economic stability.

Interplay of governance and marginalisation

The relationship between governance structures and informal workers in Banjarmasin's IWT sector is complex. It is shaped by both formal recognition and the drivers' marginalised position within the economy. Although informal in nature, the *Wisata Susur Sungai*—Banjarmasin's official river cruise program—serves as a bridge between the informal sector and formal governance. To maintain order within the system, the local government requires kelotok drivers to affiliate with a cooperative, *Koperasi Maju Karya Bersama*. The cooperative system offers 88 kelotok drivers the privilege of docking and mooring at the city's three major terminals—*Patung Bekantan, Menara Pandang*, and *Rumah Makan Haji Amat*. This structure ensures a level of regulation and economic opportunity within the informal sector, allowing participants to benefit from formal tourism programs.

However, this formalisation creates a tension between the drivers' traditional autonomy and the cooperative's stricter operational guidelines. While the cooperative offers formal recognition and access to profitable routes, some drivers, like Gazali, deliberately choose not to join due to the cooperative's relatively rigid rules. Gazali, who operates independently, explained his decision to remain outside the formal structure: *"I do not mind being outside the Koperasi Maju Karya Bersama, even if it means I do not get to access the three major terminals. I believe God will help me go through this economic difficulty. I will just be patient and wait."* His statement reflects not only his preference for autonomy but also a deeply ingrained fatalistic worldview that offers psychological support in the face of economic hardship. For drivers like Gazali, informal work allows greater flexibility and aligns with their cultural and religious beliefs, even if it means forgoing the benefits of formal recognition.

This selective engagement with formal governance structures illustrates the marginalised position of kelotok drivers in Banjarmasin's urban economy. While some drivers find value in affiliating with the cooperative, others resist the perceived constraints of formalisation, opting instead to maintain their independence. This creates a fragmented governance landscape where informal workers navigate both formal structures and their own informal networks to sustain their livelihoods. In the absence of comprehensive governmental support, drivers often rely on informal governance mechanisms such as cooperatives and social networks to negotiate their role in the city's economy. Even within the formal river cruise program, the cooperative itself functions as a mediator between informal workers and formal governance, highlighting the layered nature of governance in informal sectors.

This dynamic is particularly evident in the drivers' interactions with regulatory frameworks. For those who operate within the cooperative, formal governance provides a degree of protection and access to resources. Yet, for those who remain outside, the absence of formal recognition exacerbates their marginalisation, leaving them vulnerable to economic precarity. These drivers, while recognising the benefits of formal engagement, choose to maintain their autonomy, navigating the challenges of informality through culturally driven resilience strategies. The interplay between formal governance and the informal economy thus reveals the fragmented and selective nature of state intervention, where informal workers must continuously adapt to evolving regulatory and economic pressures.

Despite the presence of formal governance through the cooperative, many kelotok drivers continue to operate largely outside the formal regulatory framework. This reflects the persistence of informal economic practices even in sectors with partial formal recognition. The drivers' reliance on informal governance structures—such as self-regulation and community support—ensures their survival, but it also entrenches their marginalisation, as they are excluded from broader urban development initiatives and social protections. This marginalisation underscores the limitations of formal governance in addressing the needs of informal workers, particularly in sectors like the IWT, where cultural values, religious beliefs, and economic survival intersect.

Governance in Banjarmasin's IWT sector thus remains a delicate balancing act between formal recognition and informal practices. The selective participation in formal structures, as seen in the *Wisata Susur Sungai* program, highlights the flexibility of informal workers who navigate both formal and informal governance mechanisms. However, this flexibility comes at the cost of marginalisation, as drivers like Gazali remain excluded from the full benefits of formal economic participation. Their decision to stay outside the cooperative, driven by both practical concerns and cultural beliefs, illustrates the complex ways in which informal workers engage with governance structures.

Generational differences in resilience and adaptation

The intergenerational differences in resilience and adaptation strategies among kelotok drivers in Banjarmasin's IWT sector underscore the evolving nature of informal work in response to socio-economic pressures. Both older and younger drivers share a cultural and religious framework grounded in Islamic beliefs, but their approaches to coping with external challenges, such as modernisation and declining ridership, diverge in significant ways.

For the older generation, resilience is deeply rooted in cultural traditions and religious obligations. Many senior kelotok drivers see their work not merely as a means to earn a livelihood but as part of a broader, divinely ordained duty. This belief, shaped by Islamic teachings, instils a strong sense of purpose and endurance in them. Aziz, the oldest respondent in his late 70s, illustrates this approach well. As a respected elder in the community, he teaches Quranic recitation to children in his neighbourhood, emphasising the importance of young males actively participating in the economy. Aziz views economic participation as symbolic of obedience to God. "*Although fate has been written by God, it is still up to us to change it,"* Aziz often tells the younger generation. He believes that a man working hard to earn income and support his family is an act of religious devotion, reinforcing the idea that labour and sustenance are divinely intertwined. For older drivers like Aziz, the act of driving a kelotok is not just an economic activity but a spiritual duty—a commitment to both family and faith, which provides them with the resilience to continue working despite the difficulties they face.

This perspective aligns with the way other older drivers frame their experiences. Many believe that their fate is already determined by God

and that their hardships are simply tests of faith. This outlook enables them to view their socioeconomic challenges as part of a larger divine plan, fostering a sense of patience and endurance. As Ian, another senior driver, articulated in a previous section, providing for one's family is seen as the prime duty of a man, and this belief continues to be passed down to the younger generation. This religious framework, then, is not passive but serves as an active source of resilience, enabling older drivers to persist in their work despite external challenges.

In contrast, younger drivers approach these socio-economic pressures with a more pragmatic and entrepreneurial mindset. While they remain influenced by Islamic teachings and cultural values, they are more likely to adopt flexible strategies to navigate the uncertainties of informal work. For them, fatalism serves as a psychological buffer, but it is also paired with a willingness to engage in entrepreneurial risk-taking. Younger drivers often diversify their income streams by engaging in other informal jobs or starting small businesses, demonstrating a generational shift towards economic rationality. Budiman, a younger driver, summed this up by saying, *"Whether my business succeeds or fails, it's all in God's hands—but I will still try my best."* This blend of cultural belief and economic pragmatism allows younger drivers to balance their faith with the need for financial adaptability.

Many younger drivers use digital platforms and social networks to explore new avenues for income, such as offering goods delivery or promoting their services online. This represents a significant departure from the older generation, who are more likely to rely on traditional community networks for support. By engaging in entrepreneurial ventures, younger drivers demonstrate a more flexible, adaptive approach to the challenges posed by modernisation while still maintaining their cultural identity and faith.

Community solidarity and religious ethics in economic survival

In the informal economies of Banjarmasin's IWT sector, community solidarity and religious ethics are intricately intertwined, forming a dual foundation that supports the resilience of kelotok drivers. Faced with declining ridership, economic precarity, and limited formal government support, kelotok drivers rely on their shared cultural and religious beliefs to navigate these socio-economic challenges. These shared values, deeply rooted in Islam, guide both individual and collective actions, ensuring that ethical standards are maintained even under economic pressure.

The notion of *halal*—or ethical conduct within Islamic teachings—plays a pivotal role in the moral decisions of the drivers. Farhad, one such driver, explained, *"Despite tempting offers to transport illicit goods, I have consistently stayed within the laws. Not only does this safeguard my livelihood, but it is also halal."* This commitment to ethical conduct is not just a personal choice but reflects a collective ethos within the kelotok community. By adhering to *halal* practices, drivers reinforce the idea that economic survival must not come at the cost of violating religious principles, thus fostering a shared moral framework. Farhad added, *"I have always feared that God will get angry at me if I partake in illegal activities,"* further substantiating how religious fear and moral responsibility guide the ethical choices of the community.

This shared sense of moral and religious responsibility extends beyond individual actions and contributes to a sense of communal solidarity. During times of economic hardship, such as the COVID-19 pandemic, kelotok drivers organised community-based support systems, pooling resources to ensure that no one within their community was left without basic necessities. As Samsul shared, *"We shared what we had, whether it was money or food. We look after each other because we are all in this together."* Such collective action is rooted in the Islamic value of *sadaqah* (voluntary giving), which further underscores the role of religious ethics in fostering social cohesion.

For older drivers like Aziz, religious values are passed down to younger generations as part of a broader moral education. In addition to teaching children how to recite the Quran, Aziz, in his late 70s, advocates for young males to actively participate in the economy, echoing the Islamic belief that *"the Prophet Muhammad was a merchant himself."* He teaches that while fate is written by God, *"only we can change our fate,"* and it is a man's duty to work hard to provide for his family. His teachings highlight the intertwining of religious beliefs, economic resilience, and ethical behaviour within the kelotok driver community, further strengthening the sense of collective responsibility.

Through this collective framework, the kelotok drivers not only secure their livelihoods but also preserve their cultural and religious identity in the face of modernisation and economic challenges. Community solidarity, reinforced by shared religious ethics, serves as both a practical and spiritual resource, allowing drivers to navigate the pressures of the informal economy while upholding their cultural values. This interconnectedness between religion, community, and survival strategies is crucial to understanding how informal workers in Banjarmasin's IWT sector sustain themselves, both economically and morally, in an increasingly uncertain urban environment.

Discussion and conclusion: Rethinking urban informality, fatalism, and inclusive governance

This study has offered valuable insights into the dynamics at play in Banjarmasin's IWT sector, where the interplay of fatalism, resilience, and governance structures shapes the experiences of kelotok drivers. Rather than viewing challenges such as declining ridership and limited formal employment as insurmountable, these drivers embrace fatalism as a psychological and cultural tool for navigating socio-economic uncertainties. Rooted in Islamic beliefs, fatalism fosters a sense of acceptance and perseverance, transforming adversity into a source of strength. This culturally nuanced perspective enriches the broader understanding of urban informality and resilience, challenging conventional portrayals of fatalism as a passive force (Ayala et al. 2023). Instead, fatalism provides a spiritual framework that aligns personal agency with divine will, encouraging drivers to frame economic setbacks as part of a greater plan Among Banjarmasin's kelotok drivers, fatalism serves as an empowering tool, providing both psychological resilience and a spiritual framework for coping with economic uncertainties (Kosunen & Hirvonen-Kantola 2020).

Government frameworks, when designed inclusively, can adapt to these cultural realities, providing informal workers with resources while respecting their autonomy. Examples from participatory governance initiatives, such as cooperative-driven policymaking in informal economies, have shown how culturally attuned policies can bridge the gap between formality and informality (Mateo-Babiano et al. 2020). In Banjarmasin, recognising the role of fatalism in shaping drivers' resilience could inspire governance models that balance autonomy with essential protections.

Economic flexibility further underscores the resilience of the informal economy. The ability of kelotok drivers to adapt their strategies to external pressures, such as modernisation and fluctuating demand, reflects the dynamism inherent in informal economies setbacks as personal failures, drivers frame them as part of a divine plan, which cultivates a sense of purpose and endurance. This highlights the importance of considering cultural and religious frameworks when examining resilience in informal economies. Recognising these cultural dimensions underscores the need for governance approaches that are sensitive to the significance of fatalism in the lives of informal workers .

The research also sheds light on the economic flexibility that characterises informal economies like Banjarmasin's IWT sector (De Soto 2000). For instance, younger drivers have embraced entrepreneurial approaches, diversifying their income streams and integrating modern tools into their operations. This adaptability, coupled with a strong sense of cultural continuity, enables informal workers to sustain their livelihoods while navigating rapid urban change. Such strategies highlight that informal economies are not merely precarious survival mechanisms

but are also adaptive systems shaped by economic necessity and cultural values (Sharifi 2020).

This interplay between resilience and governance suggests that inclusive governance must recognise not only the economic flexibility of informal workers but also their cultural frameworks, such as fatalism, which influence their attitudes toward formalisation. For instance, older drivers, whose resilience is grounded in religious traditions, may selectively engage with governance systems, while younger, entrepreneurial drivers may view formalisation as an enabler for diversification and growth.

The findings also reveal a nuanced relationship between governance structures and informal workers. Programs like Wisata Susur Sungai (WSS) demonstrate the potential for formal governance to engage with informal economies by providing resources and opportunities for participation, However, the autonomy valued by many kelotok drivers creates a tension with formalisation, as drivers selectively navigate these government structures (Hsu et al. 2015). This tension reflects the fragmented nature of governance in informal economies and the need for governance frameworks that balance flexibility and inclusivity (Meagher 2010). Recognising the importance of cultural and economic realities in governance can ensure that interventions are both effective and respectful of the agency of informal workers.

These findings contribute to rethinking urban informality as a space not merely of socio-economic marginality but of cultural dynamism and agency. Informal economies like Banjarmasin's IWT sector embody resilience strategies deeply embedded in cultural and religious values. This challenges dominant narratives of informality as chaotic or unstructured, suggesting instead that it is a coherent system shaped by context-specific logics.

Generational differences in adaptation strategies further enrich the understanding of how informal workers navigate socio-economic challenges. Older drivers tend to rely more on traditional cultural and religious practices, whereas younger drivers adopt a more entrepreneurial approach, blending faith with pragmatism (Mattis et al. 2008). This generational shift highlights how informal economies evolve over time, with different strategies emerging in response to changing conditions. The continuity of cultural values alongside new approaches suggests that informal economies are both resilient and adaptive, capable of sustaining livelihoods while responding to broader urban changes (Yunisvita et al. 2022). The balance between continuity and innovation underscores the resilience of informal workers in the face of modernisation.

In sum, this study reveals the intricate connections between fatalism, economic flexibility, and governance, offering a holistic rethinking of urban informality. Recognising the agency of informal workers within these dynamics not only broadens the understanding of informality but also underscores the potential for governance systems to engage with informal economies in ways that are inclusive, adaptive, and culturally sensitive.

Future research directions

Building on these findings, future research should aim to deepen the understanding of urban informality and resilience through comparative and longitudinal studies. Comparative research across other riparian and archipelagic cities could illuminate shared and divergent challenges faced by informal workers in similar contexts, providing a broader understanding of informal economies in Southeast Asia and beyond. Such studies would highlight the socio-cultural and economic nuances that shape governance and resilience in diverse informal settings.

Longitudinal research is equally important to track the long-term impacts of governance interventions on informal economies. Examining how policies evolve and how informal workers adapt to these changes over time could provide critical insights into the sustainability of formalisation efforts. This approach could also shed light on the trajectories of younger generations within informal sectors, particularly their shifting strategies for resilience and economic adaptation.

In addition, future research should prioritise underrepresented voices, particularly those of women, in informal economies. The inclusion of female perspectives could reveal unique strategies for navigating governance and resilience, highlighting how gender intersects with cultural, economic, and social dimensions of informal work. For example, exploring the roles of women in supporting functions, such as ticket selling and terminal management, could provide insights into the gendered dynamics of agency and community cohesion.

Finally, further investigation into the integration of informal systems into broader urban planning frameworks would be valuable. Understanding how informal economies can coexist with formal governance structures in a way that respects their cultural and economic significance could offer pathways for more inclusive and sustainable urban development.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT authorship contribution statement

Dadang Meru Utomo: Writing – original draft, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Iderlina Mateo-Babiano:** Writing – review & editing, Supervision.

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