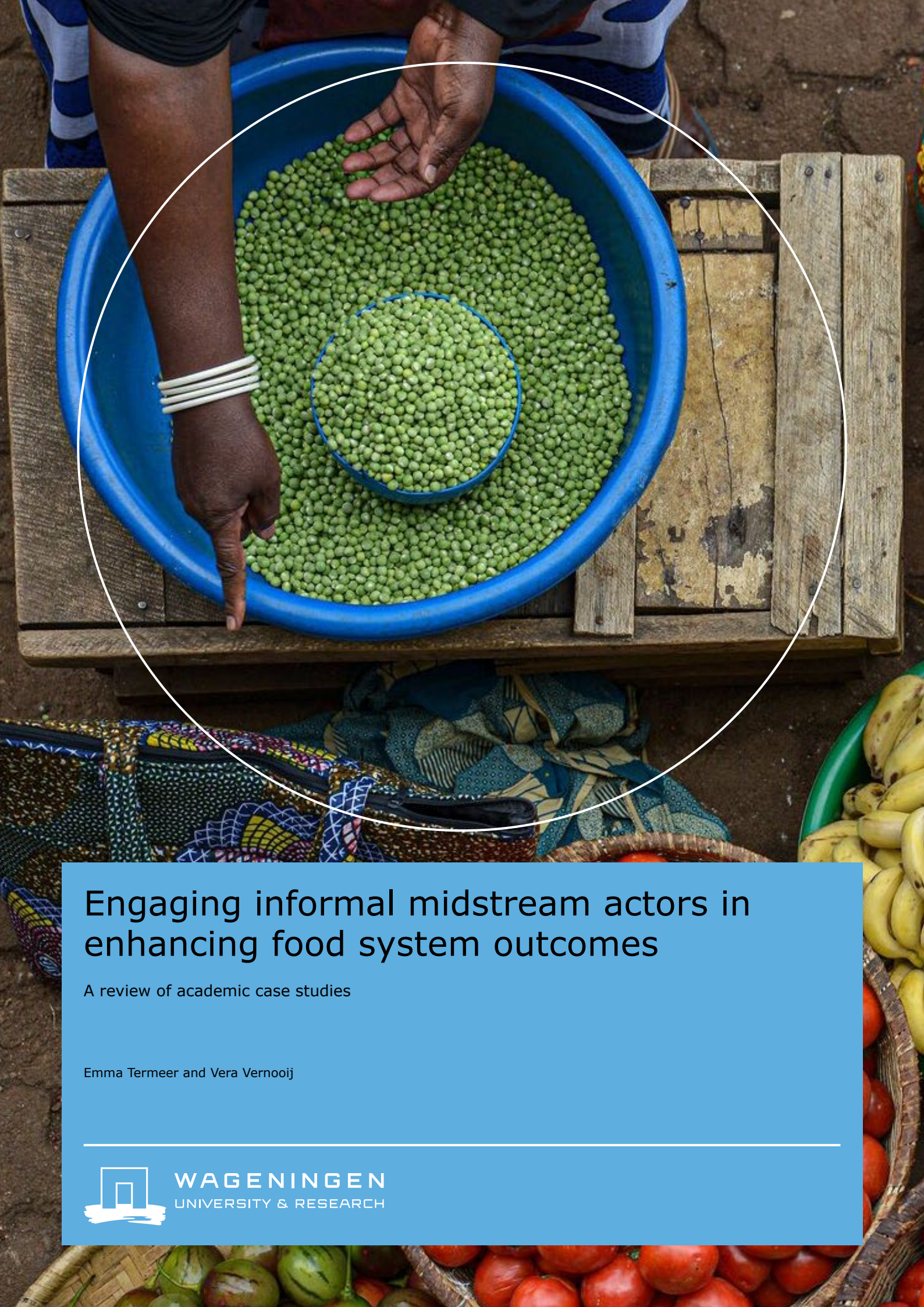

Engaging informal midstream actors in enhancing food system outcomes

A review of academic case studies

Emma Termeer and Vera Vernooij

WAGENINGEN
UNIVERSITY & RESEARCH

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In this report we answer the question: 'What can we learn from existing case studies with actors and businesses engaged in informal midstream food sectors, for contributing to positive food system outcomes?' This was done by conducting a literature search for peer-reviewed research articles. The key messages are that informal midstream food sectors are typically deeply embedded in local contexts. Therefore, diverse contexts and actors require locally tailored approaches to enhance their contributions to food system outcomes. It is recommended to enhance our understanding of relations between informal midstream actors, and formal and informal service supply chains that address the supply of parts, materials, personnel and services needed to operate agri-food supply chains.

Key words: Literature review, informal, midstream, formal, governance, organisation, business

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Summary

S.1 Main research question

This document presents a review of academic case studies on the topic of informal midstream actors and businesses. Improving our understanding of the organisation and practices of midstream actors and businesses in informal food value chains is key to involving these actors and businesses in improving food system outcomes, such as minimising food loss & waste, improving food safety, or increasing the consumption of fresh fruit and vegetables in Low and Middle Income Countries (LMICs). Midstream actors in food value chains perform all activities in between food production and consumption, such as transportation, processing, sorting and packaging.

The research question for this literature review is defined as follows:

> 'What can we learn from existing case studies with actors and businesses engaged in informal midstream food sectors, for contributing to positive food system outcomes?'

The sub-questions are:
1. What are the characteristics of informal midstream business practice, compared to formal businesses?
2. How is the informal midstream governed and organised?
3. How do informal midstream actors interact with governments?

S.2 Message

First, regarding the included articles in this literature review, the majority of studies were conducted in Africa (N=37) and Asia (N=18), and none in Latin America. The main methods in the case studies were surveys (N=26), ranging from 50 to more than 1,000 observations, and interviews (N=22). The majority of the case studies concerned food retailers (Figure S1). The sectoral focus of the studies was varied. More than half of the studies did not have a specific sectoral focus but sold multiple products, or did not specify the products sold or traded. This can be because the majority all of these studies focused on retailers or street vendors, who often sell multiple products, including non-food items.

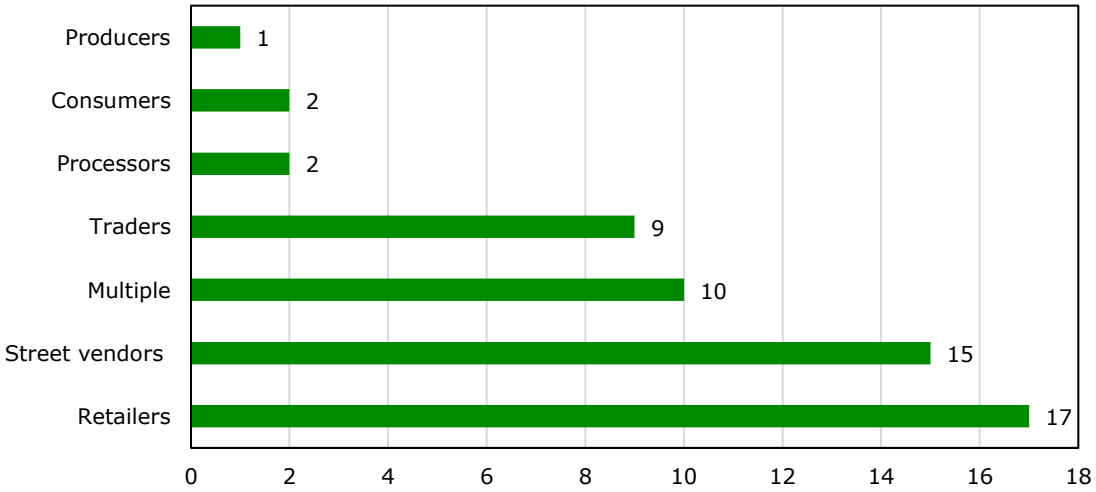

Figure S1 *Value chain actors covered in case studies*

To summarise the answers to the research sub-questions:

- Informal midstream businesses and actors are motivated to engage in informal businesses due to a variety of 'push' and 'pull' factors, including economic necessity, limited access to formal employment opportunities, survival, family support, and self-determination.
- Compared to formal businesses and actors, informal midstream business and actors are resilient and adaptable, not inherently less professional, and concerned with food quality and safety.
- Related to governance and organisation of informal midstream actors, social networks play a crucial role in informal food trading relationships, fostering trust, collaboration, and resilience.
- Relationships between governments and the informal food sector are often characterised by mutual mistrust and ineffective regulations.
- A more constructive approach is needed to create a mutually beneficial relationship between governments and informal midstream actors and businesses. Governments should recognise the important role of the informal sector in food trade and develop policies that support its growth and development.

To answer the research question, what we can learn from existing case studies with actors and businesses engaged in informal midstream food sectors for contributing to positive food system outcomes:

- Informal midstream food sectors are typically strongly locally embedded, hence diverse contexts and actors require locally embedded approaches to enhancing informal midstream contributions to food system outcomes.
- For fostering positive food system outcomes it is recommended to enhance our understanding of relations between informal midstream actors, and formal and informal service supply chains that address the supply of parts, materials, personnel and services needed to operate agri-food supply chains, including financing, and our understanding of formal-informal segment interactions in general.
- For targeted action-perspectives it is recommended to support informal midstream actors and businesses' positive contributions to food system outcomes in combination with other development domains such as nutrition, technology, food loss and waste, digitalisation, gender, labour, or food safety.

S.3 Methodology

We applied several criteria to limit the scope and ensure relevance of the studied literature, ensure language accessibility to the researchers involved, and ensure up-to-date and recent research in the field. The following criteria were applied in the search for academic case studies:

- Peer reviewed research articles on the informal midstream in food supply chains in LMICs
- Covering at least one of the research questions
- Published in the past 10 years
- Published in the English language.

This literature search was conducted in June 2023 and covered the Scopus and Web of Science databases. Relevant articles published after this timeframe were not taken into account. After removing duplicates and adding 4 articles through a scan of reference lists, 80 articles were selected as relevant for further analysis.

The first phase of analysis included reading of abstracts and categorising studies across geographical focus, food sectors discussed, value chain actors and methodology, including an indication of which research question the article would be relevant for. A total of 22 articles were excluded during this initial analysis, mostly because of the lack of focus on food supply chains, no original research and a lack of informal sector focus. In total, 58 articles were selected for further analysis and read in full.

1 Introduction

1.1 Objective

Improving our understanding of the organisation and practices of midstream actors and businesses in informal food value chains is key to involving these actors and businesses in improving food system outcomes, such as minimising food loss & waste, improving food safety, or increasing the consumption of fresh fruit and vegetables in Low and Middle Income Countries (LMICs). Midstream in food value chains includes all activities in between food production and consumption, such as transportation, processing, sorting and packaging. This document is the result of a review of academic case studies on this topic, to uncover the state of the art and to identify knowledge gaps.

1.2 Research questions and methodology

The overall research question for this literature review is defined as follows:

> 'What can we learn from existing case studies with actors and businesses engaged in informal midstream food sectors, for contributing to positive food system outcomes?'

- What are the characteristics of informal midstream business practice, compared to formal businesses?
- How is the informal midstream governed and organised?
- How do informal midstream actors interact with governments?

The review of academic case studies provides insights into these questions and provide pathways for further research on this topic. Ultimately, these insights lead to an improved understanding of how to effectively involve informal midstream actors and businesses in interventions aimed at improving food system outcomes. A literature search was conducted to find relevant research articles pertaining to the research questions mentioned above. Section 2.1 describes the literature search in detail. Then, the collection of articles was analysed by categories in Excel (Sections 2.3 and 2.4) and per research question (Chapter 3).

1.3 Reading guide

Chapter 2 provides a general overview and overall analysis of the included literature. Chapter 3 describes the key lessons and considerations to (partly) answer the research questions. Chapter 4 concludes on the research gaps and recommendations for further study. Appendix 1 provides an overview of the included references including sector(s)/product(s), value chain actor(s), country/countries, and a data remark. Appendix 2 provides the search terms that were used in the literature search.

2 Literature search and general analysis

2.1 Search and categorisation

We applied several criteria to limit the scope and ensure relevance of the studied literature, ensure language accessibility to the researchers involved, and ensure up-to-date and recent research in the field. The following criteria were applied in the search for academic case studies:

- Peer reviewed research articles on the informal midstream in food supply chains in LMICs
- Covering at least one of the research questions
- Published in the past 10 years
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2.2 Facts & figures

The majority of the academic case studies were published in 2018, 2019 and 2022 (Figure 2.1). The gap between 2019 and 2022 could be a result of the shifting focus of research during the COVID-19 pandemic, after which the topic again gained interest.

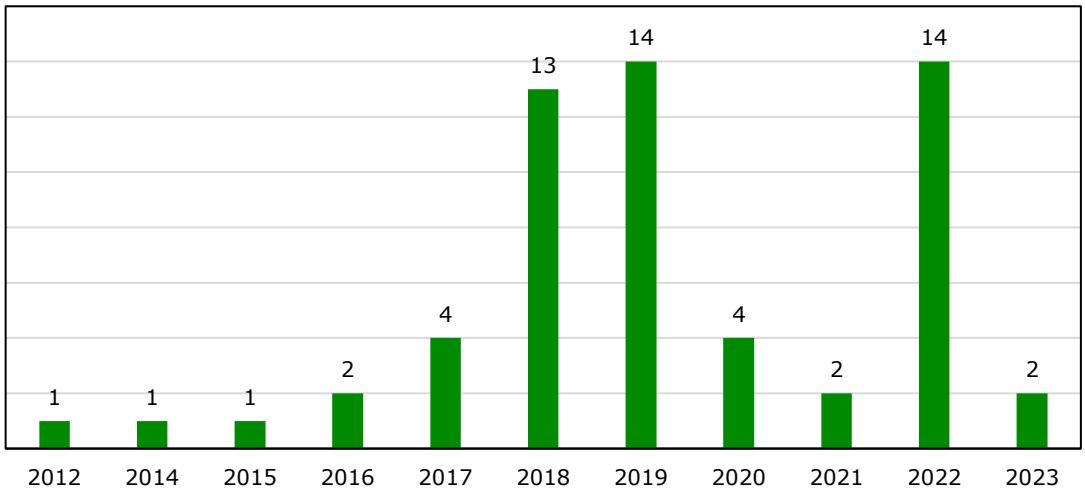

Figure 2.1 *Number of analysed case studies by publishing year*

All selected case studies were either conducted in countries in Africa (37) and Asia (18) and none in Latin America. Several articles reported comparative case studies or studies in multiple countries. Figure 2.2 shows those different countries per region. For Africa (in green), case studies in Kenya, Ghana, Nigeria and Tanzania were most common. It is notable that these countries are all anglophone, which could have resulted from the English language criterium applied. For Asia (in blue), case studies in India and Vietnam were most frequent in the sample.

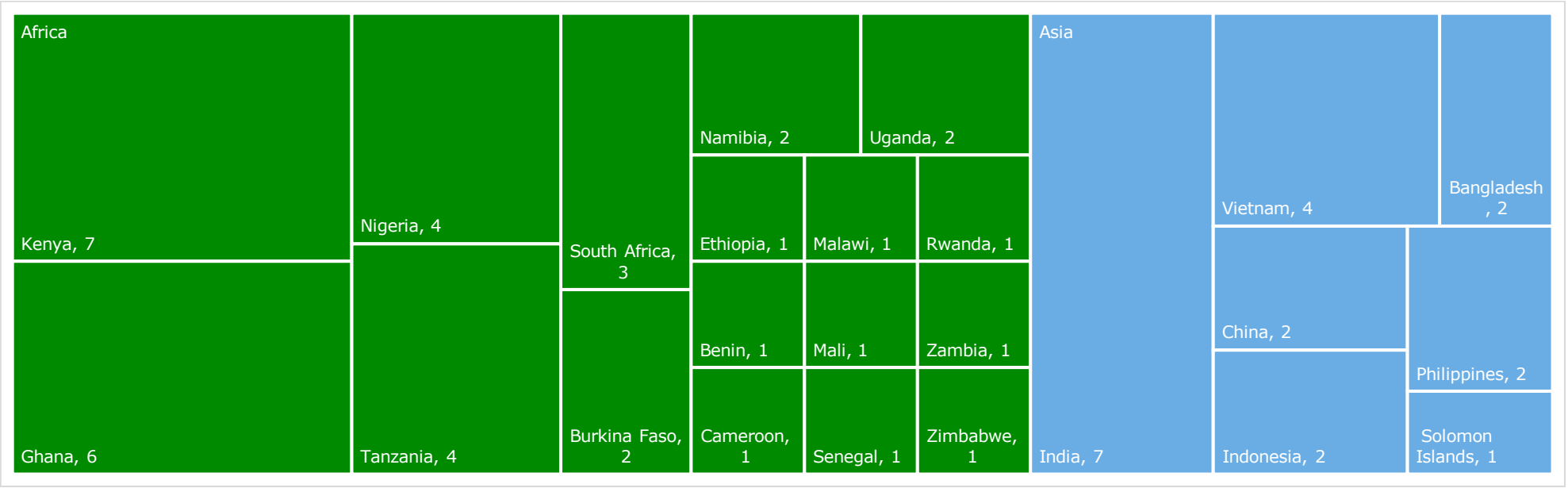

Figure 2.2 *Distribution of case studies per country and region*

The main methods used for the case studies were surveys (26 studies), ranging from 50 to more than 1000 observations, and interviews (22 studies). Figure 2.3 shows the value chain actors that were the main focus of the studies. The majority of the case studies concerned food retailers. Here, we make a distinction between studies that mention 'street food' or 'street vending' explicitly (summarised under 'street vendors') and studies that do not. Under retailers, we categorised 'food vendors', 'vendors' and 'market retailers'.

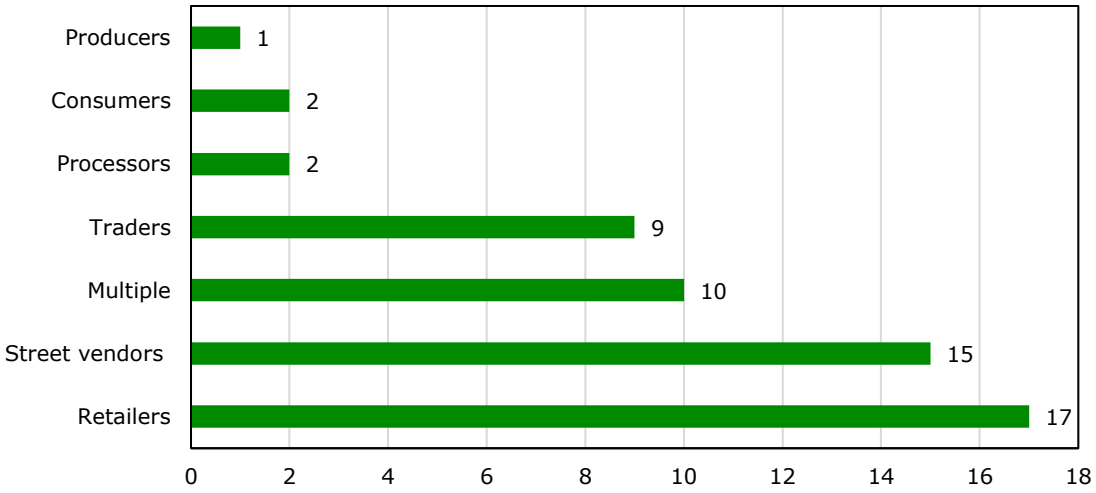

Figure 2.3 *Value chain actors covered in case studies*

Ten studies focused on either the whole value chain or a combination of value chain actors, often also including consumer or household perspectives. Nine studies focused on traders and two studies on processors. Producers and consumers were least covered in the sample, mainly because our search focus was explicitly on the midstream. These three studies had an indirect focus on the midstream, for example a survey with consumers of informal food outlets and reasons for purchasing there rather than elsewhere. This still provided important information about the functioning of the informal midstream, mainly pertaining to the first research question on informal business practice.

Lastly, the sectoral focus of the studies was varied (Figure 2.4). More than half of the studies did not have a specific sectoral focus or did not specify the products sold or traded. Almost all of these studies focused on retailers or street vendors, who often sell multiple products, including non-food items. Ready-to-eat street food, fruits and vegetables and dairy were the most common in the case studies.

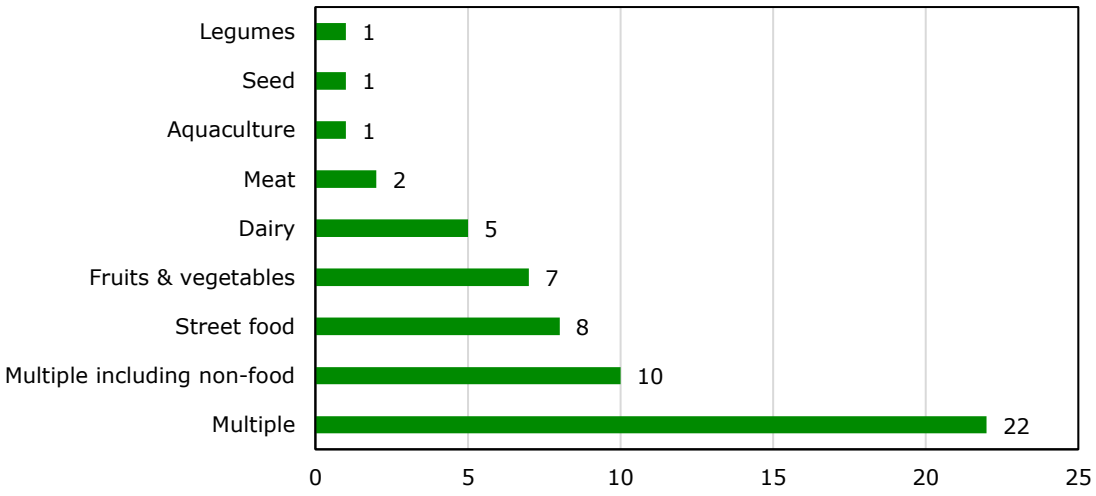

Figure 2.4 *Sectoral focus in case studies*

2.3 Identified gaps and lessons

From this review of the selected case studies and through the first quick scan of abstracts and articles, several knowledge gaps and lessons can be identified.

Informality is not always well-defined, potentially leading to different interpretations.
Language is important in this research topic. There is a significant diversity across countries and value chains, making it difficult to pinpoint what defines informality in each case. With the exception of three studies, all selected case studies mentioned informality explicitly. However, it was not always clear how this was defined, for example by stating details on whether or not businesses were registered or paid taxes to the (local) government. A clear-cut, common definition of the informal economy does not exist (Dell'Anno, 2021), although its common aspects are generally that it is either unobservable, unrecorded, or illegal. Within those aspects, however, it is possible to look at different dimensions, such as employment, financial flows or regulatory arrangements. This also means that what defines informality in different context might be different in each case. More insights into what defines informality in different contexts, or a framework for identifying types of informality, can be useful to overcome this barrier.

Case studies use different terminology to describe value chain actors.
Another challenge in definitions was found in the description of value chain actors. Some studies used 'trader' instead of 'vendor' or 'retailer'. Retailers were not well-defined in every case, making it unclear whether they operated on the streets or in designated market places. It is advised to make clear distinctions in value chain actor groups and their characteristics and activities, also taking into account that actors often take on several roles and that these characteristics can be fluid.

The majority of existing academic case studies on the informal midstream focus on retail segments.
(Street) vending is clearly a popular research topic in this field. Informal vendors play an important role for food security and vending provides a source of income for many low-income households. The fact that vendors are often the focus of these studies could be due to their visibility in the street and markets, and the important connection they hold to the consumer. However, far less is known about intermediate trading, transporting, wholesaling or processing activities, and especially about those actors that occupy these activities exclusively. It could be that many of these business activities take place in a grey zone between informality and formality, or that these are operations of scale that require technology or investments that exclude most actors operating informally.

Case studies that discuss organisation and governance often do so in relation to the government.
The case studies that covered topics related to organisation and governance did so via focusing on relations between informal value chain actors and government actors, rather than via focusing on internal organisation and governance. A gap in academic literature is therefore about internal organisation of actors operating (predominantly) in informal food sectors.

3 Literature review

This chapter summarises the lessons from the literature review corresponding to each research question.

3.1 Characteristics of informal business practices

Studies show that vendors end up in the informal sector for different reasons, either by choice or by necessity.

Many studies focus on the motivations and characteristics of informal food vendors, as food vendors and retailers are by far the most studied group in the midstream segment. In the Philippines, Hidalgo et al. (2022) state that 80% of respondents engage in informal street food businesses do so out of necessity rather than opportunity, and the informal food sector (vending) is predominantly run by women (90%). In the same country, survival, family financial security, personal desire and learning and self-determination are the most common reasons to start an informal vending business according to McCordic and Raimundo (2019). In Nigeria, women often end up in informal food businesses through informal learning processes in the family: many have a mother, aunt or sister in the same profession (Adeosun et al., 2022). Moreover, a wider lack of economic opportunities plays a role in the decision to engage in informal business practice, which raises the question to what extent performing informally is voluntary in all cases. Huang et al. (2018) provide theoretical perspectives on participation in informal economies (Table 3.1), which range from motivations originating in survival strategies, to attaining freedom. In Ghana, Tuffour et al. (2022) find that women's age and years in street food businesses were relevant factors in their business success, including whether or not women were married: marriage often meant contrains in terms of family and community responsibilities, hindering business growth. Chitete et al. (2023) establish that legume traders in their sample switch between business ventures because most of their activities depend on the season, as well as the fact that 17% rely on farming as their main occupation. They find that market information is mostly obtained through friends or relatives. For informal traders to succeed, treating customers well is essential, highlighting the importance of good communication skills (Kabonga et al., 2023). Kabonga et al. (2023) also find that the young traders they spoke to desire to professionalise their business, contrary to popular assumptions about the lack of professionalism in informal trading.

Table 3.1 *Perspectives on participation in informal economies (adapted from Huang et al., 2018)*

Perspectives	Motivations for participating in informal economies
Dualism	Survive due to job scarcity in formal economies, which is generally related to underdevelopment
Neo-marxism	Seek an alternative livelihood to escape poor working conditions in wage-earning employment in neoliberalised labour markets
Legalism	Overcome high cost of formality to earn a living as dynamic entrepreneurs in the face of unreasonable state regulations
Voluntarism	Attain flexibility, autonomy and freedom, which are generally absent in formal employment, while earning a living

The quality and safety of produce in the informal food sector can be improved by enhancing vendor skills, upgrading infrastructure, and investing in market development.

Adeosun et al. (2022) show that for ready-to-eat street food vendors in Nigeria, nutritional knowledge, purchasing and bargaining skills and cooking skills influence the variety of food groups provisioned. Overall, they find that the more diversified the food vending practice, and the more complex the skills and competences underpinning it, the higher the earnings the vendor receives. In a study on female vegetable traders in Ghana, Kushitor et al. (2022) show that the traders made a business model out of deterioration of vegetables: nearly rotten tomatoes were sold to local eateries at reduced prices, completely rotten ones to animal farmers at bargain prices. The spoilage mainly originated from the inability to store their produce in a

cool location (Kushitor et al., 2022). This same reason is cited in a study on quality issues in the dairy value chain in East Africa (Blackmore et al., 2022a, b). Many case studies mention the lack of decent physical infrastructure, which is among the key challenges faced by midstream actors in the informal sector. This also includes access to energy and decent road infrastructure. To lower transaction and transport costs, rural road infrastructure and warehouses are a necessity for traders, as well as storage facilities at the market (Chitete et al., 2023). According to Kushitor et al. (2022), governments should allocate budgets for market development projects, to facilitate new infrastructure to counter congestion and sanitation challenges at the market. This would also be beneficial to the quality and safety of produce throughout the chain (Blackmore et al., 2022a, b).

Although food safety knowledge and uptake of good practices are low, most studies show that informal vendors and traders are aware of safety challenges.

Mwove et al. (2020) found that several factors affect food safety and hygiene awareness scores in informal food vendors in Kenya, including education level, training in food hygiene and safety, mobility of street food vendors (SFVs), and public health inspections. Public health inspections had a significant impact on all aspects of food safety and hygiene scores. Mobile vendors were more likely to have poorer working conditions and food handling practices compared to non-mobile vendors. Higher levels of training and education were linked to better food safety awareness scores, while more experience in street food vending improved food handling practices. Also in East Africa, according to Blackmore et al. (2022a, b) informal markets have systems in place to oversee quality and safety, shaped by how consumers and value chain actors interact. They show that quality is crucial for everyone involved in the supply chain and for consumers, impacting their choices at every stage. This finding aligns with similar evidence from other countries such as found in the review article of Wallace et al. (2022), who find that although vendors have little knowledge of food safety, they have a positive attitude towards it. Nyokabi et al. (2018) studied the livestock value chain in Kenya and found that actors had low levels of knowledge of zoonoses and low levels of adherence to food safety standards, mostly due to a lack of formal training or low education levels in general.

Access to finance is a challenge across informal value chains.

Various studies underscore the financial struggles encountered by informal food businesses, shedding light on their borrowing patterns and initial capital challenges. Street vendors often resort to borrowing from informal lenders due to accessibility and minimal documentation requirements, despite facing high interest rates and daily payment demands, such as in the Philippines (Hidalgo et al., 2022) and India (McKay and Osborne, 2022). This borrowing habit increases vulnerability, impacting their adaptive capacity and ability to manage financial stress (Hidalgo et al., 2022). Findings from South Africa show that moreover, many vendors, especially women, start their businesses with minimal capital, relying heavily on personal savings or loans from informal sources, due to limited access to formal financial services with stringent requirements. This reliance on informal lending and low initial capital hampers their ability to stabilise or expand their businesses, rendering them more vulnerable in the informal market landscape (Tawodzera, 2019).

Access to finance, business training and market information are key for a supportive enabling environment.

Access to affordable finance is key to actors in the informal sector, as they usually rely on daily cashflows for their trading activities and have inadequate operating capital for their business (Chitete et al., 2023). Besides, affordable finance helps to invest in new equipment or other business improvements, which is in turn beneficial for improved safety and quality of food (Blackmore et al., 2022a, b). Tawodzera (2019) suggests schemes for funding informal food businesses, to improve the private sector's funding model to increase financing to small players in the informal sector. Besides finance, access to stable and reliable market information is important, as traders often rely on social networks (Chitete et al., 2023), which can lead to disbalance and uncertainties in information streams. Proper business management training and education have been proven to positively influencing handling practices, for example with dairy traders in Kenya (Zavala Nacul and Revoredo-Giha, 2022). Setting up business incubation centres, where traders can acquire skills and knowledge on business operations, can be an important means for governments and other stakeholders to ensure certain knowledge is spread widely among actors (Chitete et al., 2023), creating a 'web of informed actors' (Zavala Nacul and Revoredo-Giha, 2022). Intermediary organisations – either public

or private – could play a role in developing the innovation capacity of informal midstream business. Varga and Rosca (2019) highlight different levels to which these intermediaries could contribute (Figure 3.1).

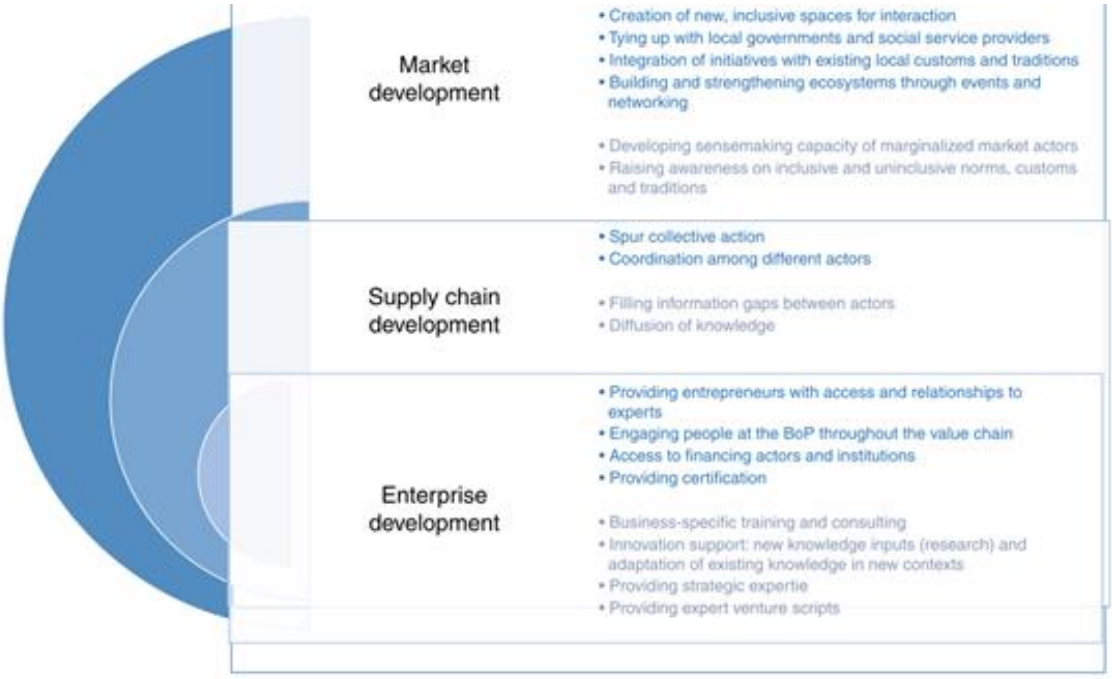

Figure 3.1 *Contributions of intermediary organisations for initiatives in Base of the Pyramid markets Source: Varga and Rosca (2019).*

3.2 Informal market organisation and governance

Social networks play a large role in informal vending relationships.
Various studies point to the fact that social networks – through social capital – play a large role in informal business relations (e.g., Widiyanto, 2019). Findings from Vietnam show that the resilience and adaptive capacity of informal food businesses depends on their social networks in the form of friendship, trust, reciprocity but also patronage or dependence (Kawarazuka et al., 2017). The fact that social networks are key to the informal sector could be attributed to the fact that much of the informal vending sector is female-headed: women tend to have social skills that makes it easy to connect to their buyers, which in turn becomes an essential skill in business continuity (Hidalgo et al., 2022). According to Kotval-K. (2021) in India, since informal vendors depends to a large extent on social ties, they are less interested in unions or the formalisation of their work, as it is perceived that these groups are not able to help them. In the relation between vendor and consumer, social ties are also important, although Kotval-K (2021) finds differences between middle class and residents and slum dwellers: middle class residents more often prefer a certain vendor based on the quality of their produce, whereas a majority of slum dwellers prefer a vendor based on the trust and relationship they had built with them. Keen and Ride (2019) show that leveraging social networks helps the business performance of vendors: vendors with the highest sales in their sample pooled labour and produce in the Solomon Islands. However, the vendors indicated that given their long working hours, it is hard to gather and self-organise.

Trading relationships with other informal actors also highly depend on trust and loyalty.
According to Blackmore et al. (2022a, b), trust and loyalty are key to trading relationships in dairy in Kenya for producers, intermediaries and vendors. The majority in their study indicate they never or rarely change suppliers, and when they do, poor quality of the produce is often the reason. On the other hand, consumers report valueing not only quality, but also cleanliness of the shop, relations with the vendor, and price. This corresponds with research on the dairy sector in Tanzania, although the quality of a suppliers milk always seems to take precedence over trust and loyalty (Nicolini et al., 2022). In a study on the fish value chain in

Vietnam, Van Chung et al., (2021) find that smallholders depend highly on collectors to connect them to output markets, giving these collectors a key advantage in the trading relationship. However, these collectors also provide farmers with finance and other services.

Informal markets have their own degrees of governance and organisation.
An example of market governance is employed by 'market queens' in Ghana, who lead traders' associations at the market and govern the daily behaviour and operations. In Accra, there are also traditional leaders who maintain relations with city authorities and traders (Kushitor et al., 2022). In the same context, market traders report that power or social position is a main factor of influence when it comes to access to market infrastructure. The distribution of resources is shared according to hierarchy, first to the market queen, then to 'commodity queens', those in charge of their subordinate traders, and last to all traders (Kushitor et al., 2022). Anand and Jagadeesh (2022) find that in India, access to some markets can be mandated through ethnic or regional identities. In another example in Indonesia, quality control teams are organised in some farmer markets, a team of vendors that takes care of the quality and health of the products that are sold, and examining products of new sellers to the market (Widiyanto, 2019). Davies et al. (2022) identify a methodology for evaluating governance arrangements in informal markets and identify indicators of market formality (Table 3.2). They show market inefficiencies can arise from internal conflicts among vendors or within market committees, compounded by a lack of established conflict resolution protocols. Additionally, inadequate government investment in essential market infrastructure and services, insufficient attention to facilitating access for producers and consumers, and deficient communication and engagement with market committees regarding compliance, upgrades, or relocations can collectively undermine market performance, potentially leading to market failure.

Table 3.2 *Indicators of market formality*

Formality variable	Weight in index
Formal market committee currently	**3**
Election and/or appointment processes	**3**
Written constitution and/or by-laws	**3**
Formal registration and/or contract with the government	**3**
Fee for green marketeers	**2**
Formal register of traders	**2**
Trading certificate or license	**2**
Regular opening and/or closing hours	**1**
Utility bill	**1**
A bank account for the market	**1**

Source: Davies et al. (2022).

3.3 Government relations with the informal sector

Relations between governments and the informal sector are often based on mutual mistrust, although government approaches to the sector differ.
In a survey among milk vendors and intermediaries, it was found that the majority perceived the government to have a negative attitude towards them, expressed in harassment or strict regulations, also resulting in reduced income (Blackmore et al., 2022a, b). Harassment often includes seizure of goods, forced removal from the area and sometimes arrests (Riley and Crush, 2023). The mistrust also originates from taxes or levies paid to (local) governments even though they do not always provide adequate infrastructure or services in return (Davies et al., 2022). This in turn has consequences for the ability of informal traders to deliver stable and safe food supply. 'Covert cooperation' can be observed in some contexts, where informal practices are tolerated although officially illegal, sometimes also 'compensatory governance', for example when the government allows former farmers that lost their land due to urbanisation to practice informal trade (Dai et al., 2019). Dai et al. (2019) observed this in Nanjing, China, where street trading was tolerated despite restrictive regulations. An umbrella term for this is 'benign neglect', described by Nicolini et al. (2022), who describe 'covert cooperation' as a more active approach, whereas on the other end of the

spectrum is the passive lack of institutional capacity to enforce regulations. Covert cooperation has benefits for the informal sector, as it can be allowed to thrive. However, it can also be a downside when, for example, there are economic hardships and subsidies or other measures that would benefit the informal sector, but are not implemented (Figure 3.2).

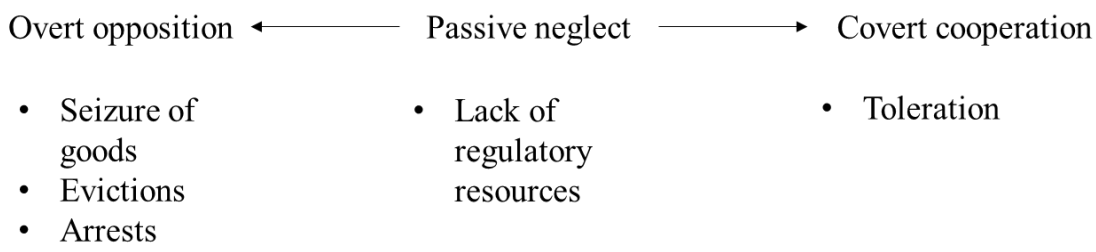

Figure 3.2 *Government approaches to the informal sector, based on Dai et al. (2019) and Nicolini et al. (2022)*

The regulatory environment does not always fit the reality of informal traders, resulting in inefficiencies.

For example, although the regulations in the Kenyan milk sector focus on pasteurisation and licensing, consumers actually prefer raw milk and producers prefer to sell into informal chains. In addition, research shows milk safety and quality is similar in informal and formal chains (Blackmore et al., 2022a, b). Some governments try to contain and control trading into designated market places, although this does not always have an effect on the incidence of informal street trading (Kazembe et al., 2019). Conversely, there are signs that the informal sector would actually welcome an active regulatory environment if it is focused more on engagement and constructive collaboration than inspection and repression (Alonso et al., 2018). In acknowledgement of the importance of the informal sector for food trade, governments should create legislation that is friendly to the sector, rather than prohibitive (Tawodzera, 2019). Regular inspections of food safety by public health officials are important to guarantee compliance with health and safety standards (Mwove et al., 2020), preferably focusing specifically on creating an enabling environment for food safety in the informal food sector (Grace et al., 2019). A better understanding of why businesses choose to operate informally can help to inform policies and interventions that reduce vulnerabilities (Hidalgo et al., 2022).

Governments need to recognise, understand and facilitate the important role of the informal food sector.

Multiple studies refer to improving the often strained relationship between the informal sector and the government, as this will ultimately be to the benefit of both. According to the review article of Liverpool-Tasie et al. (2020), midstream businesses are a key government ally in the provision of rural services to small-scale producers. Governments should support their operations instead of crowding them out. Similarly, Sperling et al. (2020) stress that small traders are key to reaching farmers in times of conflict or climate events, as they rely on localised networks and social capital to be able to continue their trading practices. Better recognition of the way these actors operate and their role in local economic development is needed to reach joint goals (Keen and Ride, 2019; Blackmore et al., 2022a, b). The reliance on the formal sector for urban food security does not correspond with the reality on the ground, and the fact that the informal sector may respond more adequately to the needs of this urban consumer group. Interventions should build on the indigenous practices being used by the entire chain of informal actors that already contribute to risk management, as well addressing informal actors' needs for finance to invest in equipment, and capacity building (Blackmore et al., 2022a, b). Conversely, Alimi et al. (2016) argue in their review article that policies and regulations for safe street food are lacking and even non-existent in some countries, calling for strengthening policies, enforcement and raising awareness of bad practices among traders and consumers.

4 Conclusions and recommendations

The studied literature provided insights into the research questions, for which conclusions are drawn in the following sections.

What are the characteristics of informal midstream business practice, compared to formal businesses?
The decision to engage in informal food trading is often driven by a complex interplay of factors, including economic necessity, limited access to formal employment opportunities, and personal motivations such as survival, family support, and self-determination. While many informal vendors and traders face challenges related to access to finance, business training, and market information, they also demonstrate resilience and adaptability in their operations. It is crucial to recognise that informal food trading is not inherently less professional or less concerned with quality and safety. Many informal traders are aware of these issues and actively seek to improve their practices. By providing a supportive enabling environment, including access to affordable finance, business training, and market information, policymakers and other stakeholders can contribute to the growth and development of the informal food sector, enhancing its contribution to food security and livelihoods.

How is the informal midstream governed and organised?
Social networks play a crucial role in informal food trading relationships, fostering trust, collaboration, and resilience. While women often excel in leveraging social networks due to their interpersonal skills, these relationships are essential for both male and female vendors. Trust and loyalty are fundamental to trading partnerships between informal actors, influencing supplier selection and customer preferences. Informal markets also exhibit varying degrees of governance and organisation, with market leaders, committees, and associations playing important roles in regulating market behaviour and ensuring fair practices. However, challenges such as internal conflicts, inadequate infrastructure, and limited government support can hinder the effectiveness of informal market governance. By strengthening social networks, promoting trust and collaboration, and addressing these challenges, policymakers and stakeholders can contribute to the sustainable development and resilience of informal food markets.

How do informal midstream actors interact with governments?
Relationships between governments and the informal food sector are often characterised by mutual mistrust and ineffective regulations. Governments may adopt repressive approaches, such as harassment and fines, while informal traders may engage in covert cooperation to avoid formalisation. However, a more constructive approach is needed to create a mutually beneficial relationship. Governments should recognise the important role of the informal sector in food trade and develop policies that support its growth and development. This includes creating a more enabling regulatory environment, providing access to finance and training, and facilitating collaboration between government agencies and informal market actors. By fostering a positive relationship and understanding the unique needs and challenges of the informal sector, governments can contribute to improving food security, livelihoods, and economic development.

Recommendations
Retailers and vendors were dominant in the studied literature, while processors, transporters, aggregators and wholesalers are less studied. There is also limited academic literature that addresses the organisation of – and interventions with actors operating in informal sectors, and literature that describes the interplay between formal and informal sector dynamics at value chain actor level. It is recommended to further enhance our learning of informality in the service supply chains that address the supply of parts, materials, personnel and services needed to operate agri-food supply chains, including financing. We also have to be cautious with categorising actors operating in informal sectors in one category, such as trader or producer, and identifying them as such, since a part of actors perform multiple activities in the supply chain or in other livelihood activities. Even within the agri-food focus, informality is often studied in relation to more defined topics, such as technology use and digitalisation, gender, food safety, innovation processes, and

employment. Although informality is the common denominator in these studies, the differing contexts and focuses make comparisons not always relevant. We therefore recommend that informality is studied in relation to more specific topics for clearer focus and that clear definitions and demarcations are provided. Lastly, as informal sector actors and sectors are typically strongly embedded in context, it should be considered to analyse articles based on geography/country for enhancing the regional, instead of topical, understanding of informal midstream actors and sectors.

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Appendix 1 Key characteristics of included studies

Authors	Year	Sector(s) / Product(s)	Value chain actor(s)	Country/countries	Methodology used
Chitete, M., et al.	2023	Legumes	Traders	Malawi	Survey (n=316) and interviews
Kabonga, I., et al.	2023	Multiple (incl. non-food)	(Young) traders	Zimbabwe	Interviews (n=15)
Hidalgo, H.A., et al.	2022	Street food	Street vendors	Philippines	Survey (n=100), FGDs, interviews
Zavala Nacul, H., and Revoredo-Giha, C.	2022	Dairy (milk)	Producers to consumers (whole chain)	Kenya	Interviews (29)
Kushitor, S.B., et al.	2022	Vegetables (tomato and cocoyam leaves)	Traders	Ghana	Survey (n=376), observation, transformation labs
Blackmore, E., et al.	2022	Dairy (milk)	Multiple	Tanzania	Survey (n=208), 15 interviews
Davies, J., et al.	2022	Multiple (only food)	Retailers	Zambia	Phone surveys (n=?)
Wallace, F., et al.	2022	Multiple (only food)	Food vendors	Multiple	Review article, 84 studies
Anand, S., and Jagadeesh, K.	2022	Multiple (only food)	Food vendors	India	Survey (n=1000), interviews
Adeosun, K.P., et al.	2022	Ready to eat	Street vendors	Nigeria	Survey (n=100)
Karg, H., et al.	2022	Multiple	Midstream	Burkina Faso, Mali, Ghana, Cameroon	Road surveys
Blackmore, E., et al.	2022	Dairy (milk)	Producers to consumers (whole chain)	Kenya	Survey (n=110)
Parrot, L., et al.	2022	Mango	Whole chains	Burkina Faso	Combination of primary and secondary (available) data
Nicolini, G., et al.	2022	Dairy (milk)	Producers to consumers (whole chain)	India	Survey (n=113), interviews (n=?)
Tuffour, J.K., et al.	2022	Street food	Street vendors	Ghana	Survey (n=300)
McKay, F.H., and Osborne, R.H.	2022	Street food	Street vendors	India	Interviews (n=24)
Van Chung N., et al.	2021	Aquaculture	Traders	Vietnam	Interviews (n=55)
Kotval-K., Z.	2021	Fresh (fruits & vegetables)	Food vendors	India	Interviews and surveys with vendors (n=60) and consumers (n=1480)
Mwove, J., et al.	2020	Street food	Street vendors	Kenya	Survey (n=345)
Liverpool-Tasie, L.S.O., et al.	2020	Multiple (only food)	Multiple	Multiple	Review article, 202 studies
Sperling, L., et al.	2020	Seed	Traders	Africa	Survey (n=287)
Bryceson, K.P., and Ross, A.	2020	Multiple (only food)	Multiple	Tonga and Solomon Islands	Secondary data and ethnographic techniques
Keen, M., and Ride, A.	2019	Multiple (only food)	Retailers	Solomon Islands	Survey (n=189)

Authors	Year	Sector(s) / Product(s)	Value chain actor(s)	Country/countries	Methodology used
Nickanor N., et al.	2019	Multiple (only food)	Retailers	Namibia	Consumer and vendor surveys (n=?)
Dai N., et al.	2019	Street food	Street vendors	China	Interviews (n=12)
McCordic, C., and Raimundo, I.	2019	Street food	Street vendors	Philippines	Survey (n=1022)
Tawodzera, G.	2019	Multiple (only food)	Food vendors	South Africa	Survey (n=1018) in five different types of residential areas in Cape Town.
Resnick, D., et al.	2019	Multiple (only food)	Food vendors	Nigeria	Interviews with local and state policy makers and CSO's (N=not reported) and trader survey (n=1097)
Kazembe, L.N., et al.	2019	Multiple (only food)	Households	Namibia	Survey (863) with households
Mohlakoana, N., et al.	2019	Multiple (only food)	Multiple	Rwanda, Senegal and South Africa	Survey (n=179), interviews (N=15)
Varga, V., and Rosca, E.	2019	Multiple (only food)	Multiple	Ethiopia, Benin, Nigeria, Bangladesh	Semi-structured interview (N=not reported)
Eijdenberg, E.L., et al.	2019	Multiple (only food)	Food vendors	Tanzania	Lit review, survey (N=140)
Widiyanto, D.	2019	Multiple (only food)	Food vendors/Managers of farmers markets	Indonesia	In-depth unstructured informal and etnographic interviews (n=12)
Rumanyika, J., et al.	2019	Multiple (including non-food)	Traders	Tanzania	In-depth interviews (n=42 street traders, n=32 customers), FGD with 8 street traders, 6 customers
Grace, D., et al.	2019	Beef	Meat processors	Nigeria	Qualitative survey (N=4) and microbiological tests (n=175 beef samples)
Alonso, S., et al.	2018	Dairy (milk)	Traders/producers selling directly to consumers	Kenya	FGD (N=8), survey of traders (N=not reported) and microbial tests of milk samples (n=not reported)
Moyo, I.	2018	Multiple (including non-food! But also food, fruits and veg)	Street vendors	Zimbabwe	Qual interviews (n=200) and observations
Huang, G., et al.	2018	Multiple (including non-food)	Street vendors (incl non-food!)	China	Semi-structured interview (N=200)
Berger, M., and van Helvoirt, B.	2018	Multiple (only food)	Retailers (formal-informal), consumers	Kenya	Mixed methods: GIS mapping of retail outlets, interviews retailers (n=20), survey consumers (n=108), semi-structured consumer interviews (n=36), follow up consumer interviews (n=34)
Namatovu, R., et al.	2018	Multiple (incl. non-food)	Food vendors (and non-food actors)	Uganda	interviews (n=49)
Croft, M.M., et al.	2018	Seeds, African Leafy Vegetable	Farmers	Kenya	Survey (n=302)
Nyokabi, S., et al.	2018	Livestock	Multiple	Kenya	Survey (n=154), interviews (n=13)
Oduro-Yeboah, C., et al.	2018	Kenkey (fermented maize 'dumpling')	Producers, retailors, vendors, consumers	Ghana	Survey (n=82 producers, n=71 vendors/retailers, n=135 consumers)
Osei Mensah, J., et al.	2018	Multiple (only food)	Food vendors	Ghana	Survey (n=314)
Marumo, O., and Mabuza, M.L.	2018	Vegetables	Consumers (not midstream)	South Africa	Survey (n=230) households
Devi, W.P., and Kumar, H.	2018	Bamboo shoots	Processors	India	4 years ethnographic research
Mondal, M.S.H.	2017	Vegetables	Food vendors	Bangladesh	1 case study, 6 interviews

Authors	Year	Sector(s) / Product(s)	Value chain actor(s)	Country/countries	Methodology used
Masika, R.	2017	Multiple (incl. non-food)	Street traders	Uganda	Survey (n=102) interviews (n=6)
te Lintelo, D.J.H.	2017	Multiple (incl. non-food)	Food vendors	India	Interviews (n=7), census of 55 food vendors
Forkuor, J.B., et al.	2017	Multiple (incl. non-food)	Street vendors	Developing countries	Narrative review
Alimi, B.A.	2016	Multiple (only food)	Street food business/whole SC	Developing countries	Review on risk factors in street food practices
Apaassongo, I.L., et al.	2016	Multiple (only food)	Food vendor	Ghana	Survey (n=309)
Mramba, N., et al.	2015	Multiple (non-food)	Street vendors	Tanzania	Preliminary interviews (n=19), FDG's with 4-5 vendors (N=4)
Turner, S., and Schoenberger, L.	2012	Multiple (incl. non-food)	Multiple food vendors (itinerant and fixed-stall, self-employed)	Vietnam	Semi-structured interviews (n=40), observations
Wertheim-Heck, S.C.O., et al.	2014	Vegetables	Sellers and consumers	Vietnam	Interviews with sellers (n=12) and consumers (n=24), census data sellers (n=75) and consumers/household survey (152)
Malasan, P.L.	2019	Multiple (only food)	Street vendors	Indonesia	1-2 years etnographic fieldwork, interview's (n=16)
Ghatak, I., and Chatterjee, S.	2018	Multiple (only food)	Street vendors	India	Survey (n=53, 21 vendors and 32 customers)
Kawarazuka, N., et al.	2018	Multiple (only food)	Street vendors	Vietnam	Interviews (n=50), additional interviews (n=10)

Appendix 2 Search terms

The following search terms were used in Scopus:

TITLE-ABS-KEY ("midstream" OR "traders" OR "dealers" OR "retailers" OR "vendors" OR "transporters" AND "informal" AND "global south" OR "developing") AND PUBYEAR > 2012 AND PUBYEAR > 2012

>> This search yielded 211 results, of which 79 were selected based on a quick scan of the abstract.

TITLE-ABS-KEY ("midstream" OR "traders" OR "dealers" OR "retailers" OR "vendors" OR "transporters" AND "informal sector" OR "informal" OR "traditional markets" AND "food" AND "global south" OR "developing") AND PUBYEAR > 2012 AND PUBYEAR > 2012

>> This search yielded 59 results, of which 30 were selected based on a quick scan of the abstract.

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