Habitat International 127 (2022) 102620

Contents lists available at ScienceDirect

Habitat International

journal homepage: www.elsevier.com/locate/habitatint

Governance of traditional markets and rural-urban food systems in sub-Saharan Africa

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ARTICLE INFO

Keywords:
Traditional markets
Food systems
Governance
Institutions
Sub-saharan Africa
Rural
Urban
Food security

ABSTRACT

Traditional markets form a critical part of rural-urban food systems in sub-Saharan Africa (SSA). Aside from providing more affordable and physically accessible food to low-income consumers, traditional markets serve as wholesalers to street vendors, create market entry points for smallholder farmers, and provide essential employment opportunities for sellers. However, many traditional markets face ongoing challenges such as infrastructure deficits, poor waste management, and internal conflict that undermine their effectiveness. Markets that perform effectively can provide requisite services to vendors and manage relationships between actors within and outside the market. We propose that the degree to which traditional markets are able to play an effective role in rural-urban food systems depends on the governance structures in place in individual markets. We aim to take initial steps toward developing an institutional analysis methodology that can be used to identify the set of institutional arrangements that are appropriate for successfully governing traditional markets. Using data from a 2021 phone call survey of 81 urban and rural markets in Zambia, and drawing inspiration from Ostrom's design principles for enduring common pool resources, we identify some of the institutional arrangements that tend to lead to effective market performance in Zambia, including market formality, the role of market committees, government engagement in markets, and conflict resolution protocols. Our study alone does not definitively identify the set of institutions that are appropriate for successfully governing traditional markets, particularly beyond the Zambian context. However, we highlight the types of data that need to be collected to achieve this objective by contributing a survey instrument and an empirical dataset of traditional markets across the rural-urban food system.

1. Introduction

Traditional markets in sub-Saharan Africa (SSA) are a critical component of food systems in both rural and urban areas and are essential to the food procurement strategies of consumers in the SSA region (Blekking, Tuholske, & Evans, 2017; Khonje & Qaim, 2019). Traditional markets comprise a collection of small traders and producers selling agricultural food products and/or non-food commodities and services from a central location (Dewar & Watson, 2018). Aside from providing more affordable and physically accessible food to low-income consumers, traditional markets serve as wholesalers to street vendors, create market entry points for smallholder farmers, and provide essential employment and income generating opportunities for sellers (Maxwell, 2000). Additionally, traditional marketplaces are often important arenas for communication, social interaction, and political engagement (Asante & Helbrecht, 2018; Monteith, 2015).

Despite their various benefits, some traditional markets face ongoing challenges that undermine their efficacy. Poorly designed and located markets experience a lack of customers or competition from other retailers like supermarkets, small retail shops, and street vendors (Dewar & Watson, 2018). Many also have to contend with health and safety risks due to limited sanitation services and infrastructure deficits, while

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https://doi.org/10.1016/j.habitatint.2022.102620
Received 14 February 2022; Received in revised form 19 May 2022; Accepted 24 June 2022
Available online 8 July 2022

vendors operating in unplanned or informal markets may face harassment from government officials (Lindell, 2008; Stacey, Grant, & Oteng-Ababio, 2021). Some of these challenges are a direct result of inadequate planning and a lack of financial or personnel capacity for managing markets. However, we propose that the precise character, organization, and effectiveness of traditional markets depends largely on the market's governance structures.

In the context of rural-urban food systems, governance constitutes the formal and informal interactions between public and/or private actors (whether individuals or collective entities) across scales that aim to promote food security (Candel, Breeman, & Termeer, 2016). This includes governing food retail in urban and rural areas and overcoming some of the challenges that traditional markets face. Governance approaches are largely informed by institutional arrangements, which refer to the sets of "shared concepts used by humans in repetitive situations organized by rules, norms, and strategies'' (Ostrom, 2010). *Rules* refer to a set of prescribed codes (must, must not, or may) that are commonly understood and predictably enforced by those responsible for monitoring behavior and applying sanctions. Whereas institutions as *rules* can be written (e.g., in market constitutions or bylaws), institutions as *norms* often describe the implicitly understood expectations that are shared among a set of actors who interact with each other (e.g., allowing trusted customers to purchase food on credit). Institutional *strategies* refer to the plans made by individuals to navigate rules and norms (e.g., approaches used by market committees for maintaining market safety and security). Strategies may be influenced by the behavior of others and by local contexts (Ostrom, 2010).

Some of the most influential work on institutional arrangements has emerged from Elinor Ostrom and colleagues, who analyzed the complex problems related to the governance of common pool resource (CPR) systems like forests, pastures, and fisheries (Ostrom, 1990). Ostrom (1990) compiled a set of case studies of CPR systems to develop a consistent methodological framework that enabled the identification of a set of eight design principles that tend to result in the successful governance of these resource systems. Although traditional markets are not CPRs, institutional analysis, including the methods for studying institutional arrangements in CPR systems, provides an opportunity to unpack the complexity of market governance.

Like CPRs, traditional markets operate within nested governance hierarchies and polycentric systems (van Bers et al., 2019). Some studies have assessed the higher 'tiers' of market governance hierarchies, including in relation to national food security policies and market legislation (e.g., Hendriks & Olivier, 2015; Mwango, Kaliba, Chirwa, & Guarín, 2019), rural smallholder market access (e.g., Markelova & Mwangi, 2010; Otekunrin, Momoh, & Ayinde, 2019), and urban-scale food system governance and planning (e.g., Haysom, 2015; Moragues-Faus & Battersby, 2021). However, few studies on traditional markets (e.g., Asante, 2020; Blekking et al., 2017) have attempted to build an understanding of what Ostrom (2007) terms 'second-tier variables,' which are the more specific characteristics of resource systems that affect their interactions and outcomes. Examples of second-tier variables include the location, size, and facilities of a system; its operational rules; and monitoring and sanctioning processes.

While some studies have also used case studies to investigate market governance processes (e.g., Asante, 2020; Battersby & Muwowo, 2018), there is not yet a systematic and consistent methodology for identifying a set of generalizable institutional arrangements that are associated with sustained and effective performance in traditional markets. We regard sustained market performance as the presence of institutions that enable markets to exist over time with some form of continuity or evolution in informal and formal governance arrangements. A single market entity may move locations and still be considered a "sustained market" if that movement is associated with a transfer of vendors and management organization from one place to another. While sustained market performance can only be measured over many years, our aim is to take a first step toward developing an institutional analysis methodology that can be used to identify the set of institutional arrangements that are appropriate for effectively governing traditional markets. Understanding these variables as they pertain to traditional markets and situating them within the context of the broader rural-urban food systems landscape, is important for gaining better insight into what factors tend to lead to sustained market performance.

To address the need for a systematic approach to studying traditional market governance, we propose an initial methodology and survey instrument in this paper. Using empirical data from 81 urban and rural markets in Zambia, we demonstrate how our methodology and survey instrument can be used to identify how some institutional arrangements manifest across geographic contexts and market characteristics. We present our paper as follows. In section 2, we introduce the role of traditional markets within rural-urban food systems. In section 3, we provide an overview of our study sites in Zambia and describe how we collected, organized, and analyzed our data. In sections 4 and 5, we present and discuss our main findings and identify key measures of market governance, including market formality, the role of market committees, government engagement in markets, and conflict resolution protocols. In the concluding section, we situate our findings in the context of traditional market governance in SSA. We also discuss further applications of our methodology and survey instrument to expand the body of work on traditional market governance. This foundational analysis sets the stage for future research on identifying the sets of institutional arrangements for effectively governing traditional markets in diverse contexts.

2. Literature

We define traditional markets as a central location in an urban or rural area where a collection of small vendors and producers sell fresh produce and other agricultural food products such as maize, meat, and fish. Vendors in some traditional markets may also sell groceries and prepared food, as well as non-food commodities and services like clothing, bicycle repairs, or luxury items (Ogbo, Ugwu, Enemuo, & Ukpere, 2019). Traditional markets may operate daily or periodically, and typically have few or no permanent structures, with vendors often selling their goods from makeshift stalls, tables, or tarps on the ground (Battersby & Watson, 2018).

What we refer to as traditional markets have also commonly been termed open-air markets (Hannah et al., 2022), public markets (Blekking et al., 2017), informal markets (Abrahams, 2010; Johnson, Mayne, Grace, & Wyatt, 2015) or, in other parts of the world, wet markets (Zhong et al., 2018). While these markets all have similar characteristics, we purposely choose to use the term "traditional" as a way to differentiate them from modern food retailers such as supermarkets and smaller, privately-owned retail shops, which trade from permanent buildings and have regular operating hours. Characteristically, there are differences in food pricing and quality between traditional markets and modern retailers (Minten & Reardon, 2008). Modern retailers typically sell foods sourced from longer supply chains, have different pricing, quantity, and packaging characteristics, and use different governance structures to traditional markets. Whereas traditional markets largely sell unprocessed, whole foods (Hannah et al., 2022), modern retailers tend to stock many non-perishable, highly processed food items. As such, these modern retailers have been criticized for their contribution to a 'nutrition transition', whereby consumer diets are becoming higher in fat, salt, and sugar (Battersby & Peyton, 2016; Demmler, Klasen, Nzuma, & Qaim, 2017).

Traditional markets exhibit a wide range of governance structures that can be viewed along a formality gradient. More formal traditional markets are owned and overseen by local governments or village leaders, and less formal markets are managed by communities or co-operatives. Led by vendors, market committees in rural and urban settings make decisions about the market and oversee day-to-day operations such as revenue collection, management of toilets and water

points, and conflict resolution (Smit, 2016). Many vendors operating in traditional markets also make use of modern technologies such as cellphones and internet banking, regardless of whether the market is located in a rural or urban setting. Thus, while the term "traditional markets" is often used in juxtaposition to modern retailers, there is a great deal of heterogeneity among traditional markets themselves.

In SSA, traditional markets are widely utilized by both urban and rural households and are a critical component of the food retail environment and rural-urban food system in most African countries (Battersby & Watson, 2018; Hannah et al., 2022). Low income urban households, many of which commonly struggle with food insecurity, source a large portion of purchased foods from traditional markets (Battersby & Crush, 2014). Traditional markets are popular among this demographic because they tend to provide food in smaller, more affordable quantities, allow for credit arrangements, and have extended hours of operation, making them more accessible and affordable than supermarkets and other modern retailers (Battersby & Watson, 2018).

While traditional markets are used extensively by urban households for food provisioning purposes (Blekking et al., 2017; Hannah et al., 2022), they are also important nodes of food supply for rural households in SSA (Sibhatu and Qaim, 2017; Muthini, Nzuma, & Qaim, 2020), who are predominantly subsistence-oriented smallholders farming less than 5 ha of land (Rapsomanikis, 2015). To achieve higher levels of dietary diversity, which is often used as a measure of nutritional adequacy, rural households must supplement food produced on-farm with food purchased from retailers. Like traditional markets in urban areas, vendors operating in rural markets predominantly stock agricultural food products like fresh produce. However, rural markets are less likely to sell non-food products and services and are typically more informal, often lacking any permanent structures, sanitation facilities, and waste management services. Several studies have indicated that strengthening rural markets and improving their accessibility should be a key strategy for improving rural food systems development and overcoming rural food insecurity (Muthini et al., 2020; Nandi, Nedumaran, & Ravula, 2021).

Of course, traditional markets serve as one source of food in a rural-urban food system. Urban households predominantly purchase, rather than produce, their food, and in larger towns or cities consumers have access to a wide variety of food retail options. Aside from traditional markets, urban households source food from street vendors, small retail shops, and supermarkets (Hannah et al., 2022). Prepared foods from restaurants and fast-food outlets may also contribute to the food consumption of some households, while others receive food remittances from relatives in rural areas (Haggblade et al., 2016; Onyango, Crush, & Owuor, 2021). Urban households that have the resources (e.g. the space, time, and farming inputs like seeds and water) to engage in urban agriculture may supplement their food purchases with food produced in urban areas like backyards or community gardens. However, while urban agriculture has shown to increase in times of economic stress (Smart, Nel, & Binns, 2015), Davies et al. (2021) found that it is not a significant contributor to food consumption among urban households in SSA.

Traditional market governance plays an important role in establishing the enabling conditions for food retail to support household food security in rural-urban food systems. Traditional markets that perform effectively have institutional arrangements that enable the provision of requisite services to vendors and support market leaders to successfully manage internal issues and relationships, as well as navigate the actors and situations that exist within the broader food system. Examples of requisite services in traditional markets include providing vendors with sufficient space to trade, investing in and maintaining market infrastructure, ensuring food safety, providing waste management services, and creating a safe and accessible market for consumers (Lindell, 2008). In regard to market relations, market committees are responsible for settling disputes among vendors and are involved in defining and enforcing rules for vendors to abide by, while also serving as the link between markets and external actors such as farmers, consumers, governments, and street vendors (Asante & Helbrecht, 2018; Lindell, 2008).

Effective governance of traditional markets ensures the sustainability of markets over time and increases their resilience to shocks and pressures that affect rural-urban food systems. For example, the impacts of climate change on supply chains and food prices (Blekking et al., 2022; Myers et al., 2017), and those of the COVID-19 pandemic on food security (Laborde, Martin, Swinnen, & Vos, 2020; Moseley & Battersby, 2020), which includes the availability, accessibility, and quality of food and the stability of these first three dimensions (FAO, 2009; Smit, 2016). Longer-term developmental trends in the SSA region, such as population growth and urbanization, further demand that traditional markets are effectively governed. By 2050, the population of SSA is projected to increase by 2.5 times from its current 1.1 billion, with a significant proportion of this growth taking place in urban areas of all sizes (Van Ittersum et al., 2016; UN-DESA, 2014; Shifa & Borel-Saladin, 2019). Accompanying this population growth is a rising demand for food and meeting this demand will require production-side and supplier-side interventions. Traditional markets provide important entry points for supplier-side efforts as they are a critical avenue through which food can be efficiently, safely, affordably, and equitably distributed.

3. Study context

Zambia is a landlocked country in south-central Africa with a population of 18 million people (Fig. 1) (World Bank, 2021). Close to 45% of the population lives in urban areas of all sizes, while the remaining 55% lives in low density rural regions (World Bank, 2018). Agriculture contributes approximately 20% to Zambia's Gross Domestic Product and is the main source of income and employment for rural households (World Bank, 2012). Shortfalls in agricultural production can contribute to food price shocks in both rural and urban areas, although the effects are often felt most acutely by urban residents who rely on food purchases from a mix of formal retail outlets and 'informal' traders to mitigate food insecurity (Battersby & Watson, 2018; Chapoto, Govereh, Haggblade, & Jayne, 2010, pp. 25–26). Informal traders such as street vendors and vendors (known as "marketeers") in traditional markets not sanctioned by the government are non-compliant with municipal regulations and licensing procedures, and are often the subjects of contention among government officials tasked with collecting taxes and 'modernizing' African cities (Battersby & Watson, 2019). As in other countries in the SSA region (Berger & van Helvoirt, 2018), Zambia has seen an influx of large, formal supermarket chains such as Shoprite and Pick 'n Pay (Battersby, 2017). Zambeef, a parastatal company, tends to dominate the production, processing, and sale of animal products in Zambia. Rural and urban food systems in the region also feature small privately-owned retail shops that are important outlets for households to access processed food (Reardon et al., 2021).

Despite the diversity of food retailers, many lower-income consumers continue to purchase the majority of their food at traditional markets (Hannah et al., 2022). Traditional markets in urban areas are either formed by communities during settlement of informal residential areas or developed and managed by the government as new formal residential areas are established. As informal areas develop, cooperatives may take on the responsibilities of market management, or in time the local governments may step in and begin collecting taxes in return for the provision of basic services such as sanitation and waste management. In rural areas, traditional market vendors may pay a levy to the local village headman, although services in the market may be provided by the district government or by an external party such as a non-governmental organization.

Regardless of the nature of their genesis, traditional markets function as important sites of food distribution in both urban and rural areas of Zambia. These markets typically operate under the legal purview of local government councils, who are mandated through the Local Government Act and the Markets and Bus Stations Act with implementing

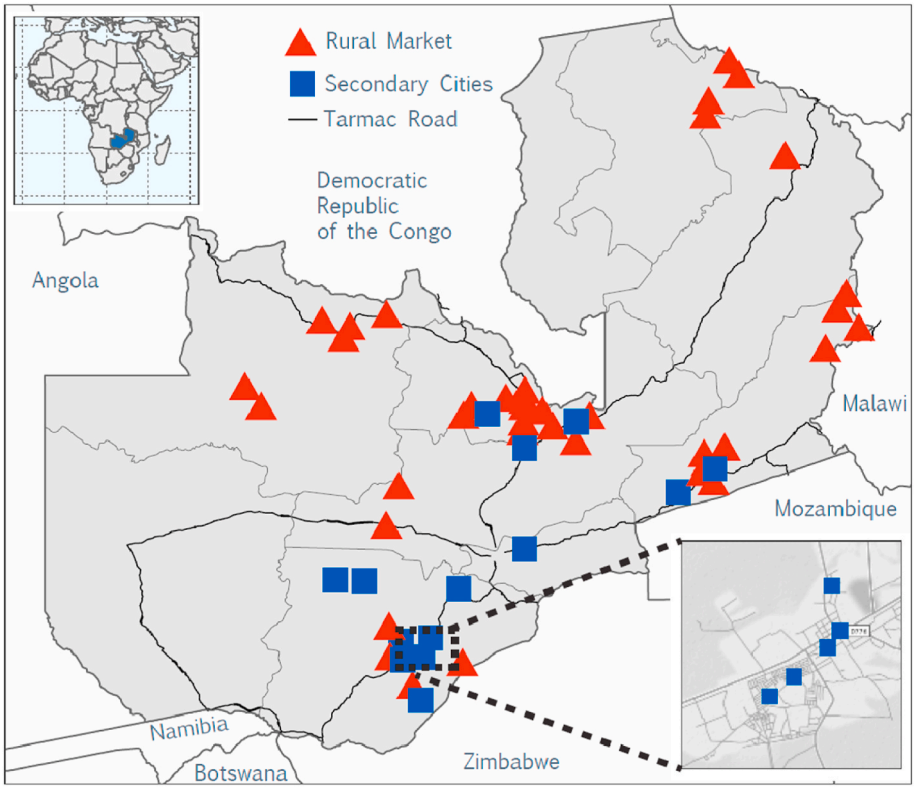

Fig. 1. Map of Zambia showing the location of secondary *cities* (blue squares) and rural *markets* (red triangles) included in the study. The top left-hand panel shows the location of Zambia in Africa, and the bottom right-hand panel shows the location of urban markets in the city of Choma.

the laws governing food trade via markets (Mwango et al., 2019). At an operational level, traditional markets in Zambia are typically governed by market management committees, which may be formed through either top-down implementation by local government or community-led through bottom-up initiatives (Blekking et al., 2017). Market committees are composed of elected or appointed members who are also vendors within the market, and who are collectively responsible for making decisions about market operations. The executive members of a market committee usually include a chairperson, vice-chairperson, secretary, and treasurer. Local government-affiliated markets take this a step further through use of a "market master" position within the committee - a government employee that oversees the administration of the market from the viewpoint of the government. The market master often has an office located within the market and serves as a critical link between the market committee and the markets unit within the council (Resnick, 2021). In cooperative or community-led markets, the composition of market management committees differs from market to market, as can the role of the market committee in overseeing operations.

4. Methods

We used primary data collected through a structured survey, which was intentionally designed to develop an institutional analysis method to describe market dynamics, and identify conditions associated with sustained and effective market performance. The survey included questions related to: internal market management, including the nature of the market committee and the formality of market institutions; market rules and conflict resolution mechanisms; the relationships between market committees, vendors, and local government agencies; operational questions related to market infrastructure, facilities, and processes; as well as common challenges experienced within the markets. Survey questions were informed by semi-structured focus group discussions with market committees, vendor surveys, meetings and interviews with local government marketing officers, as well as personal observations within urban and rural markets during fieldwork in 2019. The complete survey can be accessed in the supplementary material.

Four trained enumerators from the Zambia Agriculture Research Institute (ZARI) surveyed 81 traditional markets in the Southern, Central, Eastern, North-Western, Northern, Muchinga, and Copperbelt Provinces of Zambia (Fig. 1). Data were collected through 30-min telephone surveys in February 2021 in 48 rural markets and 33 urban markets. We accessed the phone numbers for these markets from our 2019 fieldwork records, as well as through the assistance of ZARI representatives who contacted local government officials to gain access to the phone numbers of market leaders. Market committee chairpersons were the primary survey respondents, but if they were unavailable then other committee members or senior traders with knowledge about the market were surveyed. We obtained Institutional Review Board approval to conduct human subjects-based research prior to administering the survey, and our data collection was conducted with the permission of and in coordination with ZARI.

Since markets are vitally important to households in both rural and urban areas, our sampling approach incorporated both rural and urban market governance perspectives. To collect data from urban markets, we purposely sampled markets located in secondary cities with total population sizes ranging from 5000–200,000. We focused on secondary cities for two main reasons. First, aside from an important body of work by the African Food Security Urban Network and Consuming Urban Poverty Project (e.g., Hayombe, Owino, & Otiende, 2018; Nickanor, Kazembe, & Crush, 2019), the majority of research on urban food security, food retail, and food systems has been conducted in large, primary cities, leaving a gap in knowledge regarding the nature of food systems and their governance in smaller urban areas. Second, intermediate and secondary cities with less than 500,000 people are important sites of urbanization in SSA (Zimmer et al., 2020), yet are also often where there is a lack of financial, infrastructural, and governmental

capacity to cope with the food security needs of growing urban populations (Battersby & Watson, 2018).

To collect data from rural markets, we included 48 rural markets from two districts in each of the provinces in our sample. We identified two types of markets within each district, namely: (1) markets positioned near the junction of a primary and secondary road *not* located in an urban center; and (2) markets located in less populous areas that are positioned alongside a tarmac or secondary road. Although rural households often produce food through subsistence or small-scale agriculture, many also purchase a substantial portion of their food from local markets. Rural households tend to increase their market reliance during the lean season, when food stored from previous harvests begins to deplete (Sibhatu & Qaim, 2017). Despite the importance of markets to rural households' food security, there is a lack of data on the institutional arrangements in these rural markets. Hence, by sampling both urban and rural markets, we can better understand the range of institutional arrangements in rural-urban food systems.

For our analysis, we conducted multivariate linear regression analysis to assess how a range of market characteristics are associated with the formality of each market. The market formality outcome variable is a weighted index created from the 10 variables described in Table 1. We assigned weights to these variables based on discussions with market committees identifying relevant formal and codified institutional rules (Fig. 2). The relative weights reflect the importance of different formal governance components and the frequency with which these issues were mentioned across market locations. The resulting formality score is a discrete variable that ranges from 0 to 21, with a higher score indicating that a market employs a set of institutions that are more associated with formally instituted rules (as opposed to norms), as evidenced by the use of formal committees, electoral processes, written constitutions or by-laws, and registrations or contracts, among other institutions (Table 1). We focus on the use of a formality score to characterize the institutional arrangements in our analysis, because these formal sets of institutions are easier to systematically measure in a phone call survey format than the norms and strategies that also characterize market governance. Summary statistics of the variables used in the regression analysis can be found in the Appendix (Section 8).

5. Results

The results of our regression are presented in Table 2. Several independent variables were significantly associated with the formality score of markets in our sample. Most notably, we found that government engagement with market representatives, and a perception among survey respondents that vendors within the market tend to respect the rules and authority of the market committee, were both strongly and positively associated with the formality score ($p < .01$). Market age, urbanization, and the presence of graduated sanctions for fee non-payment were also significant in terms of the statistical relationship of these independent variables with market formality ($p < .05$).

5.1. Market formality

Markets located in urban areas have more formal governance arrangements than markets located in rural areas. The 81 markets across our sample had a mean formality score of 12, which ranged from a possible score of 0–21. Whereas the lowest formality score in urban markets was 9 (in only one market), there were five rural markets with a formality score of zero. Thirty-two percent of rural markets had a formality score between 1 and 3. There were three urban markets and one rural market with the highest possible formality score of 21. A two-sample Wilcoxon rank-sum test showed that the differences in the mean scores of urban and rural markets was statistically significant ($p > .001$), where the mean formality score was higher in urban markets (16.8) than rural markets (8.8). Our regression results (Table 2) further indicate that there is indeed a strong positive correlation between

Table 1
Descriptions of the ten formality variables that were used to construct the weighted formality score. Each of the variables in the left-hand column is a binary variable (yes = 1; no = 0) indicating whether a market has adopted that specific formal institution. Each variable was multiplied by a weight (1, 2, or 3) if it had adopted that variable. The values for all weighted variables were then summed together to create the formality score.

Formality variable	Description	Weight in index
Formal market committee currently	Market committees usually have around 10–12 members who are vendors within the market. Committees have various responsibilities including making decisions about market operations, enforcing rules, and resolving conflicts. A formal market committee is one that is recognized by the government council or provided for in the market constitution or bylaws.	3
Election and/or appointment processes	Formal market committees are typically formed through election or appointment processes. Committee members who are *appointed* are selected or hired for the position, whereas those who are *elected* are voted into their position by other vendors in the market. Election and appointment processes require organization and nomination of vendors by existing/previous market committees or government officials.	3
Written constitution and/or by-laws	A constitution is the fundamental framework outlining the rights, responsibilities, and powers of actors engaged with the market. By-laws are the specific rules, regulations, or codes pertaining to individual markets or subsections within markets (e.g., regulations that separate the sale of meat, fish, and vegetables). Constitutions and bylaws are formal if they are explicitly written, rather than being implicitly understood or informally (e.g., verbally) agreed upon.	3
Formal registration and/or contract with the government	Markets that are registered with or contracted to municipal governments are likely to have more formal avenues for communication and engagement with market masters or local government officials. Theoretically, this is beneficial for several reasons, including sharing the responsibilities for revenue collection, infrastructure maintenance, and conflict resolution. Vendors operating in formally registered or contracted markets are likely to have more tenure security and face fewer unexpected operational challenges than vendors operating in informal or illegal markets.	3
Fee for green marketeers	'Green' marketeers, who are primarily women, sell fresh or dried foods such as vegetables, fruit, beans, and fish. Green marketeers pay a regular fee (usually on a daily basis) to the market committee or municipal council, which allows them to trade in the market.	2
Formal register of traders	Trader registers refer to, at minimum, a list of traders operating within the market. Registers are an important administrative tool used to keep track of details such as the number of traders selling in the market, the number and	2

(*continued on next page*)

Table 1 (*continued*)

Formality variable	Description	Weight in index
	location of available market stalls, market revenue/taxes, etc.	
Trading certificate or license	Market committees or individual vendors within a market may be required to apply for a certificate or license that allows them to trade in certain locations and/or within certain hours. There may be fees required to obtain these certificates or licenses, and they are typically renewed annually.	2
Regular opening and/or closing hours	Regular hours of operation in a market are used to aid in coordinating and oversight with market governance bodies (e.g., the government or market management committee) to ensure compliance regarding what types of vending occur, security of products, and provision of services. Additionally, regular hours enable consumers to know when suppliers will be operating.	1
Utility bill	Utility bills such as electricity or water bills are a proxy for market amenities as well as for financial management. Utility bills are typically paid for by the market committee using the daily fees from vendors, or by the municipal government.	1
A bank account for the market	A bank account is an indicator of efforts to formalize market financing.	1

urbanization and formality (Fig. 3). The only indicator of formality that we found to be more prominent in rural markets (71%) than in urban markets (35%) was regular opening and closing hours (Fig. 2).

Older markets tended to have higher formality scores than markets that were established more recently (Fig. 3). For example, the oldest market in our sample was established in 1950 and had a formality score of 18, while the newest market, established in 2019, had a formality score of 1. The majority of markets in our sample (74%) were established over the 30-year period between 1980 and 2010, and these appeared to have higher formality scores than markets that were established more recently.

5.2. Role of market committees

We found that the majority (74%) of markets in our sample had a formal market committee, and this was especially prevalent in urban markets (90%) compared to rural markets (63%). The mean size of market committees was ten members, with the average ratio of female to male members being 6: 4. While this ratio is representative of the fact that traditional markets are largely composed of women sellers, our data indicate that the top executive positions on market committees (including chairperson, vice chairperson, and secretary) were held by men. The only executive position that was predominantly held by women in our sample is the committee treasurer. Among the 60 markets in our sample that have a formal committee, we found that survey respondents largely "agreed" or "strongly agreed" that, in the past five years, the market committee's rules and authority had been respected by market vendors. This perceived respect for the committee's rules and authority among vendors was positively associated with formality score (Table 2). Overall, the market committee is largely considered to be the primary entity responsible for reprimanding vendors for fee non-payment, stealing, and undercutting of set prices.

5.3. Government engagement

Most respondents from urban markets reported that the market master or other local government official visited the market either daily or weekly (73%, compared to just 25% in rural markets). In 42% of rural markets, the market master *never* visited the market, whereas this absence of local government oversight was reported in only 18% of urban markets. Overall, 23% of markets received visits from the market master on a monthly or annual basis. While not statistically significant, our regression results show that the frequency of council visits to the market was positively associated with the market formality score (Table 2).

We further found that government officials had previously engaged market committees, vendors, or other market representatives specifically regarding compliance with rules or regulations in 85% of urban markets and 69% of rural markets. Key issues that were brought up in these interactions are highlighted in Fig. 4. The engagement of market representatives by government officials was associated with a significantly higher formality score by 5.6 points compared to markets that were not engaged by government officials regarding rules and regulations (Table 2).

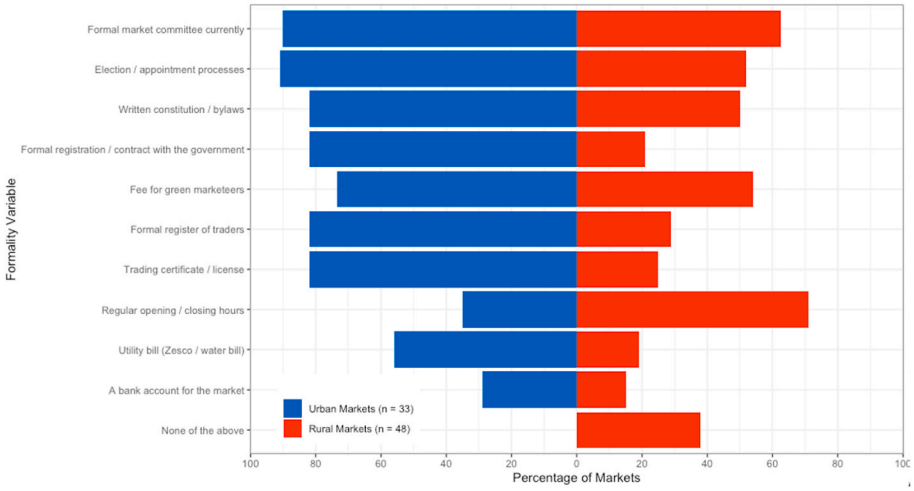

Fig. 2. Percent of rural and urban markets with formal institutions.

Table 2
Multiple linear regression with market formality score as the dependent variable.

Formality score[a]	β		St.Err.	p
Age of market (years)	.089	**	.04	.031
Urban market (ref = rural market)	5.027	**	2.049	.017
Market located within 30 min walking distance of a tarmac road (yes/no)	−.205		1.408	.885
Distance from market to nearest trunk road (km)	−.009		.016	.56
Number of other markets within a 1-h walking distance	−.334		.458	.468
Number of busy market days (0–7)	.142		.399	.722
Community started market (ref = other entity started market)[b]	.224		1.609	.89
Government previously engaged vendors or committee regarding compliance with rules (yes/no)	5.332	***	1.673	.002
Frequency of council visits to market[c]	.503		.482	.301
Perceived respect for committee rules[d]	3.006	***	1.107	.008
Government would be able to help resolve disputes if committee could not[e]	−1.131		.682	.102
Graduated sanctions for fee non-payment (yes/no)	3.239	**	1.359	.02
Infrastructure index	−.316		.391	.422
Log of population[f]	.53		.795	.507
Constant	−6.125		7.33	.406
Mean formality score	11.899		SD formality score	6.911
R-squared	0.611		Number of obs	79
F-test	7.192		Prob > F	0.000
Akaike crit. (AIC)	483.947		Bayesian crit. (BIC)	519.489

***p < .01, **p < .05, *p < .1.

[a] Weighted score constructed from the 10 variables listed in Table 1. Possible formality scores range from 0 to 21.

[b] Other entities include district governments, cooperatives, committees, village leaders, missionaries, or a combination of non-community entities.

[c] Likert scale, 0 = Never; 1 = Annually; 2 = Monthly; 3 = Weekly; 4 = Daily.

[d] Likert scale, 0 = Disagree; 1 = Neutral; 2 = Agree; 3 = Strongly agree.

[e] Likert scale, 1 = Unlikely or Not sure; 2 = Somewhat sure; 3 = Sure; 4 = Very sure/likely.

[f] Population data sourced from WorldPop database (2015).

5.4. Conflict resolution

Most respondents (73%) were "very sure" or "sure" that the government would be able to help resolve conflicts that could not be resolved by the committee itself, for example disputes among committee members or instances of crime. We expected this type of government assistance to be positively associated with the market formality score. Yet, contrary to our expectations, our regression results indicated that confidence in the government's ability to assist with conflict resolution was negatively associated with the formality score. However, this result was not statistically significant (Table 2).

One mechanism through which market committees manage conflict related to market rules is through the use of graduated sanctions. For example, in 76% of urban markets and 54% of rural markets, vendors selling fresh produce are required to pay a daily fee to trade (typically 1 or 2 Zambian Kwacha ≈ USD 0.05 or USD 0.09 at the time of data collection). If a vendor does not pay the required fee on one occasion, then there will likely be no consequence, or they will simply receive a verbal reprimand from the market committee. However, if they fail to pay the fee a second time, the vendor could have their goods confiscated, receive a monetary fine, or even be suspended from the market temporarily. On the third occasion of fee non-payment, the vendor may be permanently expelled from the market, or in more severe circumstances, external authorities may be called upon to intervene (Table 3).

Although the austerity of these sanctions may differ from market to market, the use of graduated sanctions is an indicator of formal mechanisms of conflict resolution. Indeed, we found that the markets that applied graduated sanctions for non-payment of daily fees (36% of markets overall) had formality scores that were 3.2 points higher than those markets which did not. Other examples of market rules that might be subject to graduated sanctions include stealing by vendors and undercutting of set commodity prices (Table 3).

6. Discussion and conclusion

We have presented an institutional analysis methodology for evaluating governance arrangements in traditional markets that can provide a mechanism to identify which governance arrangements could lead to sustained market performance. Markets fail when there is internal conflict among vendors and/or market committee members, and when market committees do not have clear conflict resolution protocols. Top-down barriers, such as an absence of government investment in essential market infrastructure and services; a lack of attention to market access

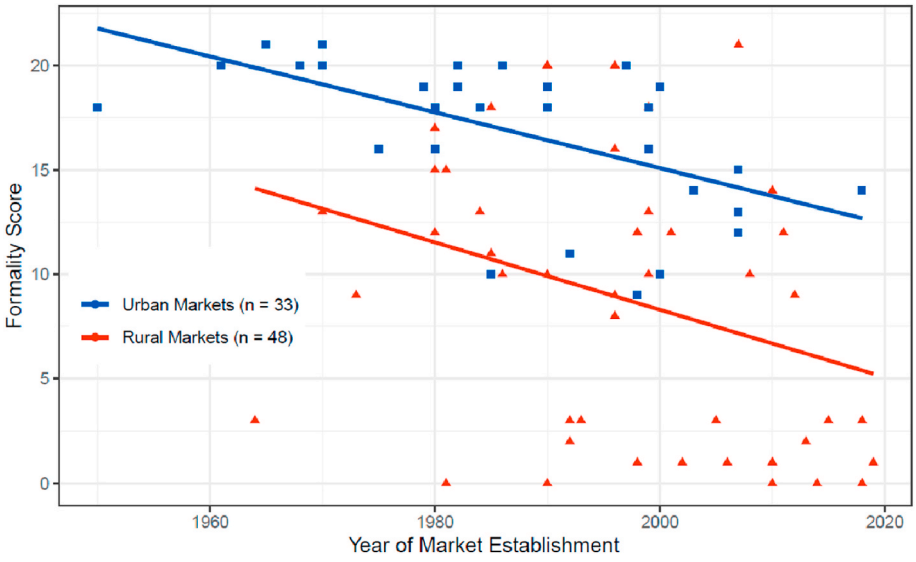

Fig. 3. Formality score by the year that rural and urban markets were established.

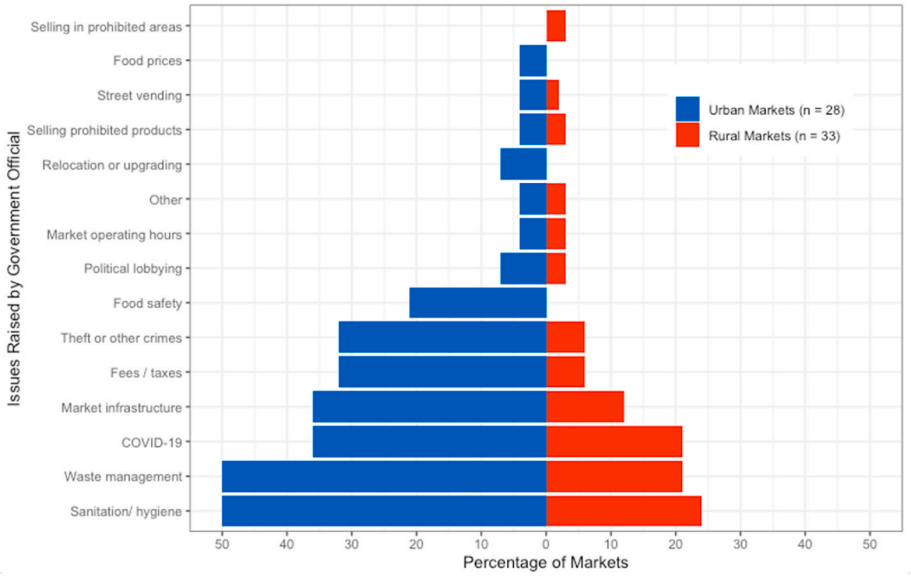

Fig. 4. Issues related to compliance with rules and regulations that were raised by governments in 61 markets.

Table 3
Number of markets that would implement various sanctions (column 1) if vendors were to break market rules (including non-payment of daily fees, stealing by vendors within the market, and undercutting commodity prices) one, two, or three times. Forty-eight percent of markets applied graduated sanctions for *at least one* of these rules. There is a lower sample size for non-payment of daily fees (column 2) because this question was only asked in the 51 markets in our sample in which vendors are required to pay a daily fee. Conversely, the questions about stealing and undercutting of prices (columns 3 and 4) were asked hypothetically in all 81 markets.

	Non-payment of daily fee (n = 51)			Stealing by vendors (n = 81)			Undercutting set prices (n = 81)		
	1st time	2nd time	3rd time	1st time	2nd time	3rd time	1st time	2nd time	3rd time
No consequence	21	7	6	7	1	1	42	29	29
Social pressure / disapproval	2	3	4	1	0	0	6	6	4
Verbal reprimand	18	13	9	41	8	1	26	18	4
Goods confiscated	3	9	4	1	8	2	0	3	6
Monetary fine	1	1	4	8	11	7	0	1	3
Temporary suspension	0	8	5	7	15	11	2	10	5
Permanent expulsion	4	5	13	7	14	25	1	5	16
Involve external authorities	2	3	3	8	18	30	1	2	5
Other	0	2	2	2	6	4	3	7	9

for producers, sellers, and consumers; and poor communication and engagement with market committees regarding issues such as rule compliance and the upgrading or relocation of markets, can also undermine market performance and ultimately lead to market failure.

We have further identified some of the institutional arrangements that could be examined further with respect to effective market operations in the Zambian context. These institutional arrangements include market formality, the role of market committees, government engagement in markets, and conflict resolution protocols. Our study alone does not definitively identify the set of institutional arrangements that are appropriate for governing traditional markets. Our foundational analysis sets the stage for further research to empirically identify which sets of institutional arrangements could lead to effective market performance. For instance, outcome variables of effective market governance could include the number of customers per market service area, the total tonnage of market produce sold per month, or the number of active marketeers. Subsequent studies can assess the relationships of these kinds of market performance variables with the institutional variables that we have identified as important to market governance in this paper. Sustained market performance can only be measured over a long period of time, hence additional longitudinal data over several years are required in this regard. We have highlighted the types of data that need to be collected to achieve these objectives, and we have contributed an empirical dataset that includes markets from across the rural-urban food system.

There are a variety of outcome variables that may be appropriate for measuring the performance of traditional markets, such as the size and duration of markets, their gross revenue, or vendor profits. Our analysis used market formality as an indicator of market performance, because while informal rules, norms, and strategies do play an important role in market functioning; facilitative instruments such as policies, regulations, and guidelines are an equally essential part of the recipe for desired market, and broader food system outcomes (Edmonds & Carsjens, 2021; Tefft, Jonasova, Zhang, & Zhang, 2021). We find that markets exhibiting evidence of having more formal institutions have clearer rules and conflict resolution protocols, and a higher degree of

organization and coordination among market leaders.

We anticipate that these formal sets of institutions that have clear monitoring, sanctioning, and enforcement mechanisms could contribute to longer-term market sustainability over time. However, before establishing such an assertion, further research would be needed on how informal market features drive market governance effectiveness. Further lines of inquiry could consider the role of power amongst market actors, how patron-client systems facilitate interactions, and how certain demographics, such as gender, age, religion, and ethnicity contribute to the development of rules, norms of interactions, and the corresponding strategies that are used to govern the market. Coupling investigations of these features of market informality with our instrument for measuring market formality would offer empirical opportunities for understanding how markets function and evolve over time, conditional on a market's formal and informal attributes. Along these lines, we also recognize that there is no panacea for achieving sustained market performance. Rather, this depends on finding the most appropriate fit between institutions and the problems that they are trying to address, taking into account the specific social, political, environmental, and economic contexts in which these institutions operate (Epstein et al., 2015; Ostrom, 2007).

A clear finding from our analysis was that urban markets tend to employ significantly more formal sets of institutional arrangements than rural markets, as measured by our formality score. In many ways, this is to be expected. Cities generally have better access to resources and are less administratively isolated than rural villages (Roberts, 2016), which is also highlighted by our finding that urban markets have a stronger local government presence and more opportunities for government engagement regarding rules and regulations. However, while we found that government engagement was positively associated with a market's formality score, this does not mean that government presence always has a positive influence on markets. For example, evidence from cities such as Maputo in Mozambique and Harare in Zimbabwe highlights how informal market vendors experience violent harassment from government agents (Kiaka, Chikulo, Slootheer, & Hebinck, 2021; Lindell, 2008). Moreover, in the case of Harare, Zimbabwe as well as in Accra, Ghana, vendors often cannot rely on local governments to provide adequate infrastructure or services, even though they collect daily fees from vendors in most markets (Lindell, 2008; Stacey et al., 2021).

The association between urbanization and formality found in our sample of markets also points to important processes of change that are likely to occur as a result of urbanization and population growth. As rural areas become more built up, market committees may need to develop more formal governance mechanisms, such as by-laws and trader registers, to better manage the needs and activities of the market. At the same time, municipal councils will likely start requiring taxes to be paid, and markets will demand better infrastructure and services to accommodate a growing number of traders and consumers. Similarly, studying the dynamics of diverse urban places, from small towns to large cities, can provide important clues into how processes of urban growth and change may affect market governance (Roberts & Hohmann, 2014). The urban component of our study focused on markets in secondary Zambian cities. As these cities expand, their markets may begin to develop more complex institutional arrangements that are more typical of large markets in primary cities like Lusaka (Blekking et al., 2017). These processes may also occur through natural progression as markets develop and become more established internally, but it is important to consider such trends in the context of shifts in broader food and urban systems, which are shaped by factors like demographic shifts, environmental and climate change, as well as political turnover. For example, while we observe a positive association of market formality with urbanization, we also know this pattern is not uniformly linear. Informal governance arrangements can also emerge in larger urban settings, albeit with some contention regarding how they should be governed, which has been evident in cases of vending in unplanned and informal markets in many larger capital cities, such as Accra and Harare (Lindell, 2008; Stacey et al., 2021).

Our findings further indicate that older markets tend to employ more formal sets of institutional arrangements than younger markets. Likely, this is because they have had more time to develop formal institutions and to reach consensus among participants on how best to govern a market within their local context. Formal institutions may be developed in younger markets through experimentation, adaptation, and learning over time, or by mirroring the implementation of formal governance protocols in older markets. However, there is considerable variation in the experiences of markets, and not all markets are destined to employ formal sets of institutions. For example, a small, rural roadside market with a few vendors might reasonably have fewer formal rules and guidelines than a larger established urban market, but still act as a well-functioning market in the sense that it is effectively providing necessary, context-appropriate goods and services to local producers, sellers, and consumers.

The design of institutions for market governance therefore needs to consider local contexts in order to ensure the best 'institutional fit'. For example, in SSA, governing markets can be an onerous task for local governments, who simultaneously face an array of overarching developmental challenges, including poverty, unemployment, and inequality. In this context, market committees have a particularly important role to play compared to markets in regions where local governments have greater capacity and resources to oversee markets. Local policy contexts are also important to consider when designing market institutions. For example, in Zambia, the Markets and Bus Stations Act provides municipal councils with power to collect rents and levies from vendors, designate specific times and places for markets to operate, regulate the use of market buildings, and maintain order and cleanliness in the market, among other powers (Resnick, 2021). While these are all important for sustained market performance, decisions are often implemented without consideration of their food security or livelihood implications. This has been seen recently in Ghana and Zambia, where decisions to upgrade or relocate markets without engaging with vendors or consumers has led to severe conflicts (Stacey et al., 2021; Asante & Helbrecht, 2019; Asante, 2020; Battersby and Muwowo, 2018). In part, these challenges are related to a lack of funding and insufficient mandate to engage in food systems planning at the municipal level (Haysom, 2021). A failure among municipal government departments to realize and act on the relationships between infrastructure and food access can limit important food sources, such as informal markets and street vending. This response adds to the uncertainty of food supply, safety, and livelihoods, particularly for women and the poor. Indeed, spatial and economic planning in SSA cities has largely continued to mirror colonial-style, elitist planning rather than a hybrid approach in which governments interact with citizens to develop integrated approaches to rural-urban food systems planning and development (Cobbinah & Darkwah, 2017).

Traditional markets are an important component of both rural and urban food systems in SSA. Understanding and improving the governance of these markets is essential for achieving sustained market performance, especially in the context of transformations in food systems linked to urbanization, retail modernization, shifting demographics, and the impacts of climate and environmental change on food availability, access, and utilization (Laborde et al., 2020; Moseley & Battersby, 2020). Agrawal (2001) proposes that statistical and comparative approaches (rather than case-studies) are required to develop an understanding of how to sustainably govern CPRs. Hence, additional data are needed from traditional market contexts beyond our study site to identify the institutional design principles that tend to result in sustained market performance.

Our paper offers a first effort at developing an empirically driven approach for achieving this goal, and we contribute an empirical dataset which shows that formal market institutions, respect for the market committee's rules and authority, constructive government engagement, and clear conflict resolution protocols in the form of graduated sanctions, tend to contribute to effective market functioning in the Zambian

context. This work serves as a critical starting point for improving research on traditional markets, and the methods from this study can be used to analyze market governance in other countries within and beyond the SSA region. In this way, we can begin to accumulate empirical data and explore the relationships between institutional arrangements and the performance of traditional markets over time.

Authorship statement

Julia Davies: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Software; Roles/Writing – original draft; Writing – review & editing, Jordan Blekking: Conceptualization; Investigation; Methodology; Roles/Writing – original draft; Writing – review & editing, Corrie Hannah: Conceptualization; Formal analysis; Investigation; Methodology; Roles/Writing – original draft; Writing – review & editing, Andrew Zimmer: Visualization; Roles/Writing – original draft; Writing – review & editing, Nupur Joshi: Conceptualization; Roles/Writing – original draft; Writing – review & editing, Patrese Anderson: Conceptualization; Investigation; Methodology; Roles/Writing – original draft; Writing – review & editing, Allan Chilenga: Conceptualization; Investigation; Project administration; Validation; Writing – review & editing, Tom Evans: Conceptualization; Funding acquisition; Methodology; Project administration; Resources; Supervision; Validation; Writing – review & editing.

Funding

This research was supported by United States National Science Foundation grants DEB-1924309 and SES-1832393.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.habitatint.2022.102620.

Appendix. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Median	Min	Max
Formality score (0–21)	81	12.037	6.902	13	0	21
Age of market (years)	81	27.914	15.08	25	2	71
Urban market (ref = rural market)	81	.407	.494	0	0	1
Market located within 30 min walking of a tarmac road (yes/no)	80	.625	.487	1	0	1
Distance from market to nearest trunk road (km)	81	36.544	40.963	17.862	.023	151.257
Number of other markets within 1-h walking distance	80	1.475	1.432	1	0	7
Number of busy market days (0–7)	80	3.625	1.529	3	1	7
Community started market (ref = other entity started market)[1]	81	.815	.391	1	0	1
Government previously engaged vendors or committee regarding compliance with rules (yes/no)	81	.753	.434	1	0	1
Frequency of council visits to market[2]	81	2	1.673	2	0	4
Perceived respect for committee rules[3]	81	2.358	.658	2	0	3
Government would be able to help resolve disputes if committee could not[4]	81	3.086	1.217	4	1	4
Graduated sanctions for fee non-payment (yes/no)	81	.358	.482	0	0	1
Infrastructure index	81	−8.20e-08	1.601	.867	−2.570	1.716
Population[5]	81	6110.481	11673.65	787	787	43811

1 Other entities include district governments, cooperatives, committees, village leaders, missionaries, or a combination of non-community entities.
2 Likert scale, 0 = Never; 1 = Annually; 2 = Monthly; 3 = Weekly; 4 = Daily.
3 Likert scale, 0 = Disagree; 1 = Neutral; 2 = Agree; 3 = Strongly agree.
4 Likert scale, 1 = Unlikely or Not sure; 2 = Somewhat sure; 3 = Sure; 4 = Very sure/likely.
5 Population data sourced from WorldPop database (2015).

References

Abrahams, C. (2010). Transforming the region: Supermarkets and the local food economy. *African Affairs, 109*(434), 115–134. https://doi.org/10.1093/afraf/adp068

Agrawal, A. (2001). Common property institutions and sustainable governance of resources. *World Development, 29*(10), 1649–1672. https://doi.org/10.1016/S0305-750X(01)00063-8

Asante, L. A. (2020). Urban governance in Ghana: The participation of traders in the redevelopment of Kotokuraba market in Cape Coast. *African Geographical Review, 39*(4), 361–378. https://doi.org/10.1080/19376812.2020.1726193

Asante, L. A., & Helbrecht, I. (2018). Conceptualising marketplaces in Anglophone West Africa: A sexpartite framework. *Geojournal, 85*(1), 221–236. https://doi.org/10.1007/s10708-018-9946-4

Asante, L. A., & Helbrecht, I (2019). Changing urban governance in Ghana: the role of resistance practices and activism in Kumasi. *Urban Geography, 40*(10), 1568–1595. https://doi.org/10.1080/02723638.2019.1631109

Battersby, J. (2017). Food system transformation in the absence of food system planning: The case of supermarket and shopping mall retail expansion in Cape town, South Africa. *Built Environment, 43*(3), 417–430. https://doi.org/10.2148/benv.43.3.417

Battersby, J, & Crush, J (2014). Africa's Urban Food Deserts. *Urban Forum, 25*, 143–151. https://doi.org/10.1007/s12132-014-9225-5

Battersby, J., & Muwowo, F. (2018). Planning and governance of food systems in Kitwe, Zambia: A case study of food retail space. In *Urban food systems governance and poverty in African cities* (pp. 128–140). Routledge.

Battersby, J., & Peyton, S. (2016). The spatial logic of supermarket expansion and food access. In J. Crush, & J. Battersby (Eds.), *Rapid urbanisation, urban food deserts and food security in Africa*. Cham: Springer. https://doi.org/10.1007/978-3-319-43567-1_3.

Battersby, J., & Watson, V. (2018). Addressing food security in African cities. *Nature Sustainability, 1*(4), 153–155. https://doi.org/10.1038/s41893-018-0051-y

Battersby, J., & Watson, V. (2019). Urban food systems governance and poverty in African cities. *Urban Food Systems Governance and Poverty in African Cities - (Open Access)*. https://doi.org/10.4324/9781315191195

Berger, M., & van Helvoirt, B. (2018). Ensuring food secure cities–retail modernization and policy implications in Nairobi, Kenya. *Food Policy, 79*, 12–22. https://doi.org/10.1016/j.foodpol.2018.04.004

van Bers, C., Delaney, A., Eakin, H., Cramer, L., Purdon, M., Oberlack, C., … Vasileiou, I. (2019). Advancing the research agenda on food systems governance and transformation. *Current Opinion in Environmental Sustainability, 39*, 94–102. https://doi.org/10.1016/j.cosust.2019.08.003

Blekking, J., Giroux, S., Waldman, K., Battersby, J., Tuholske, C., Robeson, S. M., et al. (2022). The impacts of climate change and urbanization on food retailers in urban sub-Saharan Africa. *Current Opinion in Environmental Sustainability, 55*, Article 101169. https://doi.org/10.1016/j.cosust.2022.101169

Blekking, J., Tuholske, C., & Evans, T. (2017). Adaptive governance and market heterogeneity: An institutional analysis of an urban food system in sub-Saharan Africa. *Sustainability, 9*(12), 2191. https://doi.org/10.3390/su9122191

Candel, J., Breeman, G., & Termeer, C. (2016). The European Commission's ability to deal with wicked problems: An in-depth case study of the governance of food security. *Journal of European Public Policy, 23*(6), 789–813. https://doi.org/10.1080/13501763.2015.1068836

Chapoto, A., Govereh, J., Haggblade, S., & Jayne, T. S. (2010). *Staple food prices in Zambia. Prepared for the COMESA policy seminar on "Variation in staple food prices:*

Causes, consequence, and policy options (pp. 25–26). Maputo, Mozambique: January 2010 under the Comesa-MSU-IFPRI African Agricultural Marketing Project (AAMP).
Cobbinah, P. B., & Darkwah, R. M. (2017). Toward a more desirable form of sustainable urban development in Africa. *African geographical review, 36*(3), 262–285. https://doi.org/10.1080/19376812.2016.1208770
Davies, J., Hannah, C., Guido, Z., Zimmer, A., McCann, L., Battersby, J., et al. (2021). Barriers to urban agriculture in Sub-Saharan Africa. *Food Policy, 103*, Article 101999. https://doi.org/10.1016/j.foodpol.2020.101999
Demmler, K. M., Klasen, S., Nzuma, J. M., & Qaim, M. (2017). Supermarket purchase contributes to nutrition-related non-communicable diseases in urban Kenya. *PLoS One, 12*(9), Article e0185148.
Dewar, D., & Watson, V. (2018). *Urban markets: Developing informal retailing* (Vol. 8). London & New York: Routledge.
Edmonds, A. M., & Carsjens, G. J. (2021). Markets in municipal code: The case of Michigan cities. *Sustainability, 13*(8), 4263. https://doi.org/10.3390/su13084263
Epstein, G., Pittman, J., Alexander, S. M., Berdej, S., Dyck, T., Kreitmair, U., … Armitage, D. (2015). Institutional fit and the sustainability of social–ecological systems. *Current Opinion in Environmental Sustainability, 14*, 34–40. https://doi.org/10.1016/j.cosust.2015.03.005
Retrieved From FAO. (2009). *Food, agriculture and cities: Challenges and priorities* (pp. 1–3) http://www.fao.org/fileadmin/templates/FCIT/PDF/food-agriculturecities_Advocacy.pdf.
Haggblade, S., Duodu, K. G., Kabasa, J. D., Minnaar, A., Ojijo, N. K. O., & Taylor, J. R. N. (2016). Emerging early actions to bend the curve in Sub-Saharan Africa's nutrition transition. *Food and Nutrition Bulletin, 37*(2), 219–241. https://doi.org/10.1177/0379572116637723
Hannah, C., Davies, J., Green, R., Zimmer, A., Anderson, P., Battersby, J., et al. (2022). Persistence of open-air markets in the food systems of Africa's secondary cities. *Cities, 124*, Article 103608. https://doi.org/10.1016/j.cities.2022.103608
Hayombe, P. O., Owino, F. O., & Otiende, F. (2018). Planning and governance of food systems in Kisumu, Kenya. In J. Battersby, & V. Watson (Eds.), *Urban food systems governance and poverty in Africa*. Routledge.
Haysom, G. (2015). Food and the city: Urban scale food system governance. *Urban Forum, 26*(3), 263–281. https://doi.org/10.1007/s12132-015-9255-7
Haysom, G. (2021). Integrating food sensitive planning and urban design into urban governance actions. *Urban Forum, 32*, 289–310. https://doi.org/10.1007/s12132-021-09417-9
Hendriks, S. L., & Olivier, N. J. (2015). Review of the South African agricultural legislative framework: Food security implications. *Development Southern Africa, 32*(5), 555–576. https://doi.org/10.1080/0376835X.2015.1044075
Johnson, N., Mayne, J. R., Grace, D., & Wyatt, A. J. (2015). *How will training traders contribute to improved food safety in informal markets for meat and milk? A theory of change analysis*. IFPRI Discussion Paper 1451, Available at SSRN: https://ssrn.com/abstract=2685229.
Khonje, M. G., & Qaim, M. (2019). Modernization of African food retailing and (un) healthy food consumption. *Sustainability, 11*(16), 4306. https://doi.org/10.3390/su11164306
Kiaka, R., Chikulo, S., Slootheer, S., & Hebinck, P. (2021). The street is ours". A comparative analysis of street trading, Covid-19 and new street geographies in Harare, Zimbabwe and Kisumu, Kenya. *Food Security*, 1–19. https://doi.org/10.1007/s12571-021-01162-y
Laborde, D., Martin, W., Swinnen, J., & Vos, R. (2020). COVID-19 risks to global food security. *Science, 369*(6503), 500–502. https://doi.org/10.1126/science.abc4765
Lindell, I. (2008). The multiple sites of urban governance: Insights from an African city. *Urban Studies, 45*(9), 1879–1901. https://doi.org/10.1177/2F0042098008093382
Markelova, H., & Mwangi, E. (2010). Collective action for smallholder market access: Evidence and implications for Africa. *The Review of Policy Research, 27*(5), 621–640. https://doi.org/10.1111/j.1541-1338.2010.00462.x
Maxwell, D. (Ed.). (2000). *Urban livelihoods and food and nutrition security in Greater Accra, Ghana* (Vol. 112). Intl Food Policy Res Inst.
Minten, B., & Reardon, T. (2008). Food prices, quality, and quality's pricing in supermarkets versus traditional markets in developing countries. *Review of Agricultural Economics, 30*(3), 480–490. https://www.jstor.org/stable/30225891.
Monteith, W. (2015). A 'market for the people'? Changing structures of governance and participation in a Ugandan marketplace. *Development, 58*(1), 58–64. https://doi.org/10.1057/dev.2015.17
Moragues-Faus, A., & Battersby, J. (2021). Urban food policies for a sustainable and just future: Concepts and tools for a renewed agenda. *Food Policy, 103*, Article 102124. https://doi.org/10.1016/j.foodpol.2021.102124
Moseley, W., & Battersby, J. (2020). The vulnerability and resilience of African food systems, food security, and nutrition in the context of the COVID-19 pandemic. *African Studies Review, 63*(3), 449–461. https://doi.org/10.1017/asr.2020.72
Muthini, D., Nzuma, J., & Qaim, M. (2020). Subsistence production, markets, and dietary diversity in the Kenyan small farm sector. *Food Policy, 97*, Article 101956. https://doi.org/10.1016/j.foodpol.2020.101956
Mwango, M., Kaliba, M., Chirwa, M., & Guarín, A. (2019). *Informal food markets in Zambia: Perspectives from vendors, consumers and policymakers in Lusaka and Kitwe. Sustainable diets for all discussion paper*. Cape Town and Lusaka: Centre for Trade, Policy and Development (CTPD), Hivos, and the International Institute for Environment and Development (IIED). https://pubs.iied.org/16659iied.
Myers, S., Smith, M., Guth, S., Golden, C., Vaitla, B., Mueller, N., … Huybers, P. (2017). Climate change and global food systems: Potential impacts on food security and undernutrition. *Annual Review of Public Health, 38*(1), 259–277. https://doi.org/10.1146/annurev-publhealth-031816-044356
Nandi, R., Nedumaran, S., & Ravula, P. (2021). The interplay between food market access and farm household dietary diversity in low and middle income countries: A systematic review of literature. *Global Food Security, 28*, Article 100484. https://doi.org/10.1016/j.gfs.2020.100484
Nickanor, N., Kazembe, L., & Crush, J. (2019). *Food security in Africa's secondary cities: No. 2: The Oshakati-Ongwediva-Ondangwa Corridor, Namibia. Urban food security series No. 28*. Cape Town: African Food Security Urban Network.
Ogbo, A., Ugwu, C. C., Enemuo, J., & Ukpere, W. I. (2019). E-commerce as a strategy for sustainable value creation among selected traditional open market retailers in Enugu state, Nigeria. *Sustainability, 11*(16), 4360. https://doi.org/10.3390/su11164360
Onyango, E. O., Crush, J., & Owuor, S. (2021). Migration, rural–urban connectivity, and food remittances in Kenya. *Environments, 8*(9), 92. https://doi.org/10.3390/environments8090092
Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge university press.
Ostrom, E. (2007). A diagnostic approach for going beyond panaceas. *Proceedings of the National Academy of Sciences, 104*(39), 15181–15187. http://www.pnas.orgcgidoi10.1073pnas.0702288104/20pna/.
Ostrom, E. (2010). Institutional analysis and development: Elements of the framework in historical perspective. *Historical developments and theoretical approaches in sociology, 2*, 261–288. Encyclopedia of Life Support Systems (EOLSS).
Otekunrin, O. A., Momoh, S., & Ayinde, I. A. (2019). Smallholder farmers' market participation: Concepts and methodological approach from Sub-Saharan Africa. *Current Agriculture Research Journal, 7*(2), 139. https://doi.org/10.12944/CARJ.7.2.02
Rapsomanikis, G. (2015). Small Farms Big Picture: Smallholder agriculture and structural transformation. *Development, 58*, 242–255. https://doi.org/10.1057/s41301-016-0028-y
Reardon, T., Tschirley, D., Liverpool-Tasie, L. S. O., Awokuse, T., Fanzo, J., Minten, B., … Popkin, B. M. (2021). The processed food revolution in African food systems and the double burden of malnutrition. *Global Food Security, 28*, Article 100466. https://doi.org/10.1016/j.gfs.2020.100466
Resnick, D. (2021). Taxing informality: Compliance and policy preferences in urban Zambia. *Journal of Development Studies, 57*(7), 1063–1085. https://doi.org/10.1080/00220388.2020.1841171
Roberts, B. (2016). Rural urbanization and the development of small and intermediate towns. *Regional Development Dialogue, 35*, 1–23. October 2014).
Roberts, B., & Hohmann, R. P. (2014). *The Systems of Secondary Cities: The neglected drivers of urbanising economies*. Retrieved from www.citiesalliance.org.
Shifa, M., & Borel-Saladin, J. (2019). African urbanisation and poverty. In J. Battersby, & V. Watson (Eds.), *Urban food systems governance and poverty in African cities* (Vol. 29). London & New York: Routledge. https://doi.org/10.4324/9781315191195.
Sibhatu, K. T., & Qaim, M. (2017). Rural food security, subsistence agriculture, and seasonality. *PLoS One, 12*(10), Article e0186406. https://doi.org/10.1371/journal.pone.0186406
Smart, J., Nel, E., & Binns, T. (2015). Economic crisis and food security in Africa: Exploring the significance of urban agriculture in Zambia's Copperbelt province. *Geoforum, 65*, 37–45. https://doi.org/10.1016/j.geoforum.2015.07.009
Smit, W. (2016). Urban governance and urban food systems in Africa: Examining the linkages. *Cities, 58*, 80–86. https://doi.org/10.1016/j.cities.2016.05.001
Stacey, P., Grant, R., & Oteng-Ababio, M. (2021). Food for thought: Urban market planning and entangled governance in Accra, Ghana. *Habitat International, 115*, Article 102400. https://doi.org/10.1016/j.habitatint.2021.102400
Tefft, J., Jonasova, M., Zhang, F., & Zhang, Y. (2021). *Urban food systems governance: Current context and future opportunities*. FAO and the World Bank. https://openknowledge.worldbank.org/handle/10986/35936.
UN-DESA. (2014). *World urbanization prospects: The 2014 revision, highlights*. Department of Economic and Social Affairs. Population Newsletter/Issued by the Population Division of the Department of Economic and Social Affairs, United Nations 32.
Van Ittersum, M. K., Van Bussel, L. G., Wolf, J., Grassini, P., Van Wart, J., Guilpart, N., … Cassman, K. G. (2016). Can sub-Saharan Africa feed itself? *Proceedings of the National Academy of Sciences, 113*(52), 14964–14969. https://doi.org/10.1073/pnas.1610359113
World Bank. (2012). *Agribusiness indicators: Zambia*. Washington, DC: World Bank. Retrieved from https://openknowledge.worldbank.org/handle/10986/26224.
World Bank. (2018). *World Bank open data* (Online) Retrieved from: https://data.worldbank.org/.
World Bank. (2021). *The World Bank in Zambia* (Online) Retrieved from: https://www.worldbank.org/en/country/zambia/overview#1.
Zhong, T., Si, Z., Crush, J., Xu, Z., Huang, X., Scott, S., … Zhang, X. (2018). The impact of proximity to wet markets and supermarkets on household dietary diversity in Nanjing City, China. *Sustainability, 10*(5), 1465. https://doi.org/10.3390/su10051465
Zimmer, A., Guido, Z., Tuholske, C., Pakalniskis, A., Lopus, S., Caylor, K., et al. (2020). Variability of urban population growth trajectories in Southern Africa. *Landscape Ecology*, 2–26. https://doi.org/10.1007/s10980-020-01086-6