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Brockers and bridges: Social networks as drivers of Tanzania rural business development

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Background: Small businesses drive rural transformation in Africa; however, their potential is hindered by limited access to essential resources. In Tanzania's emerging urban centres (EUCs), where agrarian and urban economies intersect, social networks' role in business development has received limited empirical attention.

Aim: This study examined how strong and weak social networks of family, friends, and businesses influence small business performance in rural Tanzania.

Setting: This study was conducted in Ilula, a small town in the Kilolo district of the rural Iringa region, Tanzania.

Method: Gephi Geolayout and ordinary least squares (OLS) regression were used to plot social networks and examine their influence on business performance from a random sample of 459 businesses.

Results: Social networks influenced the vertical and horizontal flow of products and information. Businesses linked to dominant tomato value chains and manufacturing and wholesale retail trading are central network brokers and bridges of information and products. However, institutions as enablers played a limited role in supporting networking. The OLS results showed that increasing business network size and social influence enhanced business performance.

Conclusion: The interaction of businesses in EUCs provides social interaction supporting market information and goods flow, furthering business development. Networks can expand through institutions, enabling resource pooling.

Contribution: Leveraging EUCs' geographical potential along the rural-urban continuum, strengthening social networks among business subgroups while providing supportive structures like institutions, road infrastructure, finance and capacitation to businesses, especially those linked with key crop value chains, will enhance business performance and rural development.

Keywords: rural; small business; social networks; development; business performance.

Introduction

The role of social networks in supporting entrepreneurial development through strategic decision-making, particularly among small businesses, has captured renewed attention in the recent past with the advancement of technology and globalisation (Yin & Jahanshahi 2018). This is particularly dominant in rural areas of sub-Saharan Africa, where formal institutions and supportive infrastructure are limited. Social networks in this context refer to close-knit relationships and interactions among individuals, groups and organisations or institutions that facilitate resource flow. These networks are embedded in the social fabric of rural communities of family, friends and business acquaintances (Song 2024).

In Tanzania, about 65% of the population resides in rural areas, and small businesses account for 90% of businesses as a growing source of livelihood besides agriculture, which is the major employer of about 65% of the rural workforce (URT 2024; World Bank 2023). Most of these businesses are informal with constrained access to finance, markets and infrastructure (Mwakifwamba, Chisanza & Ngalesoni 2024). Thus, businesses turn on to informal credit sources (Village Community Banking [VICOBA] savings groups), family and friendship networks, and middlemen to access credit and market information (Karg et al. 2018; Nyaki 2022).

These relationships tend to intensify around small towns where businesses are concentrated (Tacoli 2017, 2022).

The rapidly expanding urban areas in rural small towns, herein referred to as emerging urban centres (EUCs), serve as focal points for business development, functioning as market centres for agricultural and industrial finished goods sourced from rural and distant urban areas (Agergaard et al. 2019; Lazaro et al. 2019). In an agrarian economy, most small businesses maintain connections to agriculture sector enterprises in the rural setting, which attracts migration and investment in other secondary businesses (Nyaki, Kilima & Larsen 2022). The interrelationship of local and migrant networks and institutions or trade organisations, coupled with strategic interaction on businesses and markets, generates a resource pool that businesses utilise to access constrained resources (Nyaki et al. 2025; Ratten 2022).

According to Klärner and Knabe (2019), social networks in rural areas are limited and weak, whereas they are more extensive and influential in urban areas. Rural EUCs, however, offer a unique combination of networks that extend beyond family circles and/or bounded communities to strategic interactions that influence transnational migration dynamics (Wilson 2012). While EUCs demonstrate significant potential as focal points for rural business development, the stronger social networks surrounding them present considerable opportunities for facilitating this development and accessing otherwise inaccessible resources (Ahrari et al. 2018). The significance of establishing small businesses within stronger networks of interaction for a developing economy has become evident in recent years (Alamsyah, Sudarmiatin & Wardana 2024; Kozan & Akdeniz 2014); however, this argument has not received sufficient emphasis in Tanzania, where rural business development is constrained. This situation necessitates an examination of whether the existing social networks across all businesses impact business development in rural Tanzania.

Existing studies have explored the role of social networks in business development, particularly in urban and cross-border contexts. For example, Kuépié, Tenikue and Walther (2016) found that social networks supported business growth in West Africa through cross-border trade, while Dossou et al. (2023) highlighted their influence on the performance of young women in agribusiness in Benin. However, these studies predominantly focused on urban areas, where informal sectors are less dominant and institutions are relatively stronger. Moreover, they often relied on subjective performance indicators, such as perception indices, rather than business performance variables such as sales turnover and profitability (Dossou et al. 2023; Kuépié et al. 2016). Moreover, the unique cultural, social and economic dynamics of rural Tanzania, such as the prevalence of informal economies, close communal relations and business-crop or farm sector linkages which fuel market development in EUCs, suggest that the mechanisms through which social networks influence business development may differ significantly from those in urban or developed settings.

This pokes empirical attention by targeting focus to all businesses by presenting a graphical social network analysis (SNA) of crop and non-farm businesses in supporting product and information flow, given the nature of network embeddedness and examining how these networks influence business performance. By doing so, this research contributes to the growing body of literature on social networks and rural business development, offering insights that are both theoretically and practically significant.

Social network theory by Borgatti and Lopez-Kidwell (2014) and Borgatti et al. (2024) underpins this study. This theory emphasises that an actor's position in a network determines the constraints he or she faces and the opportunities he or she seizes. According to Borgatti, Everett and Johnson (2013), networks are a way of thinking about social systems that pay special attention to the relationships among entities that make up a system, commonly known as actors or nodes. The characteristics of the nodes (businesses in this case) are termed attributes, whereas the relationships between nodes are termed edges or ties (Borgatti et al. 2024). The edges are either directed or undirected; this study adopts a directed network to capture the flow of goods, services and information between actors within and to and from the EUCs.

It has also been observed that economic agents such as producers and traders tend to strike a balance between two structural extremes that determine their exposure to opportunities and affect their operations (Greenberg, Farja & Gimmon 2018; Walther 2014). Firstly, economic agents are central to a limited number of peers (embeddedness). Secondly, they are structurally positioned as brokers between clusters of actors (Zhao et al. 2023).

Embeddedness in networks exposes actors to information, ideas and shared values, and promotes collaboration across various business categories. Tregear and Cooper (2016) found that embeddedness in rural communities allows knowledge sharing and brings actors closer, empowering both individuals and communities. On the other hand, brokers are considered crucial in providing external resources and ideas. Spiro, Acton and Butts (2013) identify three key roles played by brokers when there are many disconnected networks of actors. The roles include: the transfer of resources between two disconnected parties ('rejoicing third'). This role is played by a business that has external linkages connecting retailers with producers or suppliers; facilitating matching between two social actors for shared benefits; and the third who joins, for instance, connecting businesses with banks or institutions that offer business development services such as provision of additional capital and training; and connecting and coordinating the business activities of third parties, which includes sharing new information with dispersed and geographically constrained actors (Brass & Krackhardt 2012; Walther 2015).

As presented in Figure 1, different categories of businesses are interrelated and connected in a web of interactions through their social networks of product and information exchange as key resources that initiate their connectivity. The positions of these businesses, as explained by their level of embeddedness, and brokerage in the web of interaction, as measured by network degree, betweenness and eigenvector centralities, coupled with the inherent attributes of the business owner, influence the performance of their businesses.

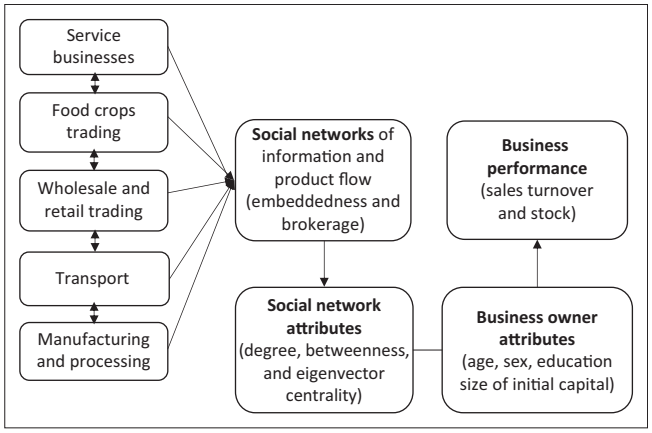
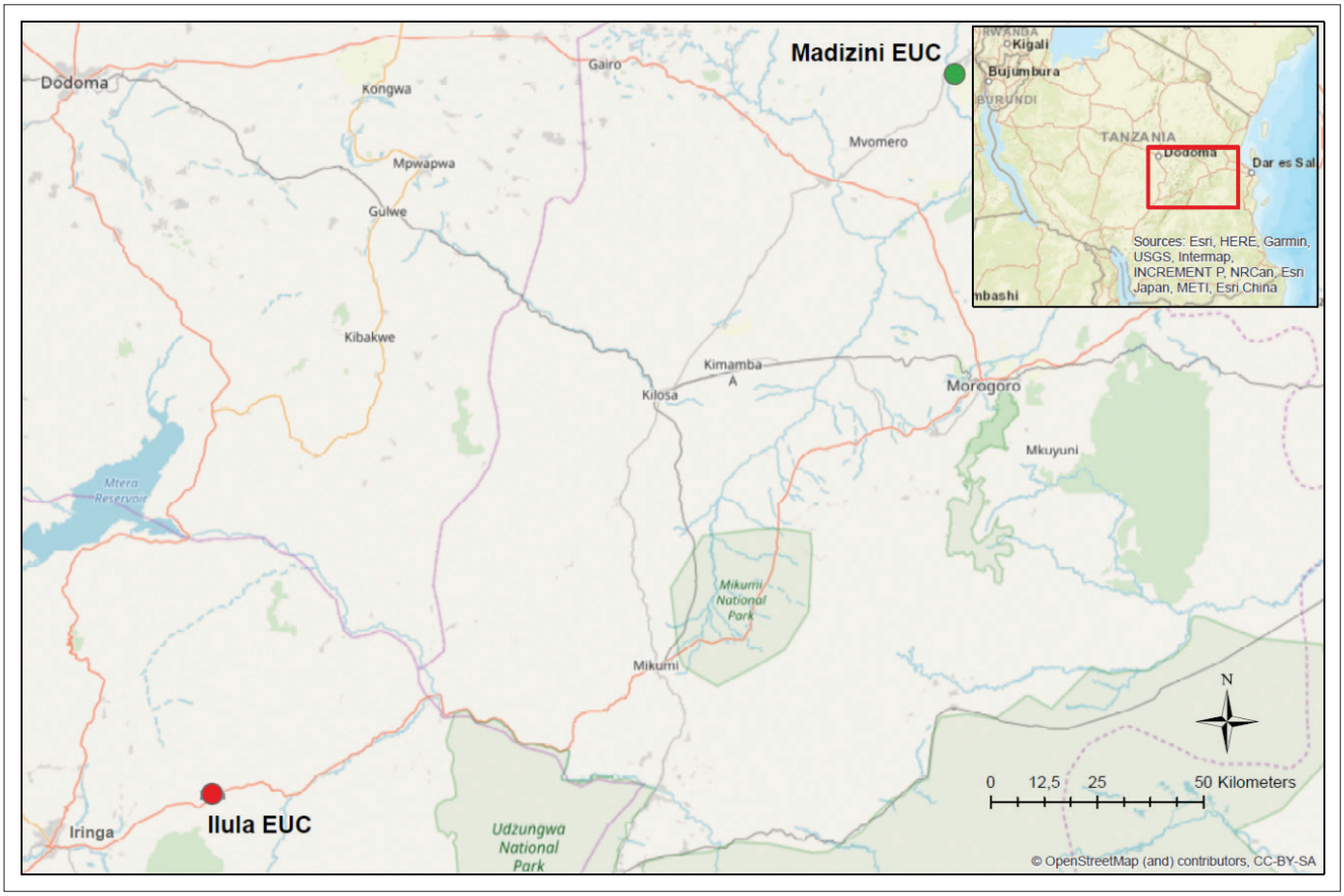


FIGURE 1: Conceptual framework of the study.

Methods

Study sites

The study was conducted in EUCs of Ilula township in rural Iringa region in Tanzania. A custom area for each EUC was marked, enclosing an area with a high population and settlement in the township. The selection of the two EUCs was also informed by the African Urbanisation Database of Africa (Africapolis), which identifies growing towns over time (Africapolis 2019). Africapolis in a comprehensive and standardised geospatial database on cities and urbanisation in Africa; it combines demographic data, satellite and aerial imagery and other cartographic sources to generate long-term comparative and urban dynamics analyses for about 7500 agglomerations in 50 countries. Ilula (Figure 2) was purposefully selected from four EUCs whose township status was developed as they registered fast growth in business investment in rural areas (Lazaro et al. 2019). Geographically, the Ilula is in Kilolo district of rural Iringa region. The Ilula EUC comprises Ilula and Nyalumbu wards with Ilula Mwaya, Mtua, Sokoni, Matalawe, Igunga, Itunda or Isele, Ding'inayo or Ilala, Masukanzi, Itabali, Nyakilomo, Madizini and Majengo Mapya being the sub-villages.



Source: Birch-Thomsen, T. & Larsen, M.N., 2019, 'Rural-urban (land) transformation -emergence of urban centres in Tanzania. Session: "Land use change processes and interactions along the urban-rural gradient"', in *Proceeding of the open science meeting of the global land programme conference*, University of Bern, Bern, April 24–26, 2019, pp. 1–26 and Nyaki, S.A., Larsen, M.N., Kilima, F.T. & Bahta, Y.T., 2025, 'Social networks and business investment in emerging urban centres in rural Tanzania', *Southern African Journal of Entrepreneurship and Small Business Management* 17(1), 14. https://doi.org/10.4102/sajesbm.v17i1.1094

EUC, emerging urban centres.

FIGURE 2: Map of Tanzania showing Ilula emerging urban centres.

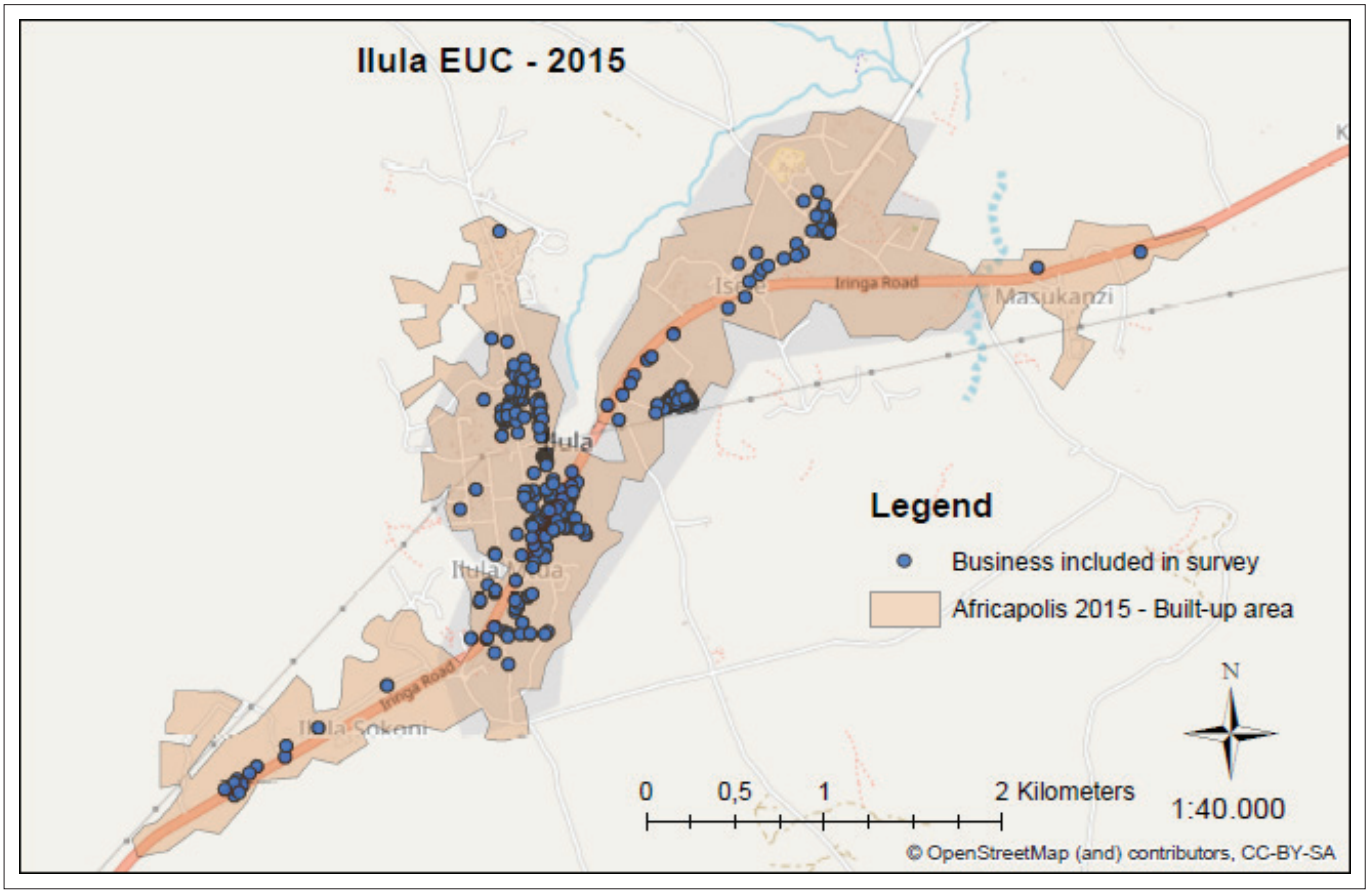
Sampling design and data collection

The selection of respondents was guided by network boundaries established during fieldwork, which were product exchange ties within the predefined boundaries of the EUCs. Satellites and Google Maps were used to identify the boundaries of the EUCs, including the highly built-up areas and zones where most businesses were located, as shown in Figure 3. Using a spatial-random design, as in Brønd (2018), businesses were randomly selected within each of the predetermined categories of businesses and geocoded based on their location. The categories were formed based on the Tanzania Revenue Authority (TRA) framework of business registration. Employing name generators used in network studies, businesses were asked to name up to eight people that they frequently traded with. A total of 459 businesses in Ilula were physically surveyed through face-to-face interviews with the aid of local village and business officers.

Data were collected through a business survey, using a structured questionnaire with ethical clearance for project number 13-P02-TAN obtained from the Sokoine University of Agriculture and local authorities. All the participants were requested to participate in the survey, and their consent was obtained informally as they were presented with the clearance certificate and accompanied by village officers.

Qualitative data from EUC business support actors were collected through interviews from 23 key informants and 11 focus group discussions, to supplement the network information obtained from the questionnaire survey. Interviews were conducted with township and/or ward administrations, elders and financial institutions (including banks and other financial intermediaries, such as Savings and Credit Cooperatives [SACCOs] and VICOBA, TRA, Kilolo district offices, business associations and township trade officers).

The network data obtained from the business survey were processed and analysed using Gephi software (Bastian, Heymann & Jacomy 2009) to obtain centrality measures. Embeddedness and brokerage in the business networks were computed using degree centrality and betweenness centrality, respectively. Degree centrality measures the number of ties a node has relative to the total number of ties in the network. Embeddedness, in this study, refers to a state in which a firm has a large total network connection with a high degree centrality compared to other surrounding firms or nodes. Betweenness centrality measures how often an actor appears on the shortest path among actors in a network of businesses. This is the number of times that a node occurs along a geodesic path.



Source: Adapted from Birch-Thomsen, T. & Larsen, M.N., 2019, 'Rural-urban (land) transformation -emergence of urban centres in Tanzania. Session: "Land use change processes and interactions along the urban-rural gradient"', in *Proceeding of the open science meeting of the global land programme conference*, University of Bern, Bern, April 24–26, 2019, pp. 1–26 and Nyaki, S.A., Larsen, M.N., Kilima, F.T. & Bahta, Y.T., 2025, 'Social networks and business investment in emerging urban centres in rural Tanzania', *Southern African Journal of Entrepreneurship and Small Business Management* 17(1), 14. https://doi.org/10.4102/sajesbm.v17i1.1094

EUC, emerging urban centres.

FIGURE 3: The location of surveyed businesses in Ilula emerging urban centres.

Yifan-Hu proportional and OpenOrd visualisation layout formats (Hu 2011; Martin et al. 2011) were employed to plot the embeddedness and brokerage position of actors in the product and information networks (Figure 4 and Figure 5). The qualitative data from the interviews were processed according to the different types of questions, followed by a more detailed examination of patterns and explanatory factors on business development trajectories in the EUCs.

Analytical framework

Social networks of product exchange were studied from both relational and attribute standpoints; tie relational features in terms of embeddedness and brokerage are matched against business attribute characteristics across all business categories. In this study, brokers (businesses with high betweenness centrality) are classified based on their roles in linking businesses within and across business categories, and those who coordinate traders within and outside the EUCs. Based on their structural positions, five types of brokers were analysed. They are gatekeepers, coordinators, representatives, itinerants or consultants and liaisons (Spiro et al. 2013; Walther 2015). Gatekeepers link businesses from within the group, which in this case is within the EUC, to businesses outside the EUC. Representatives, such as gatekeepers, play a central role in linking businesses outside the EUC to those within the EUC (vertical linkage). In this study, these two factors are presumed to be central to sourcing and channelling potential (non-redundant) information and resources from new and distant actors. Coordinators are brokers who connect various types of businesses within the EUC. The information and resources shared by these brokers are vital for horizontal linkages. Liaison links businesses to actors belonging to either group. They mostly include institutions such as the government and financial institutions. Itinerants or consultants are brokers who link two or more businesses of the same kind without belonging to that kind or a cluster of businesses. Institutions are the dominant players in this category.

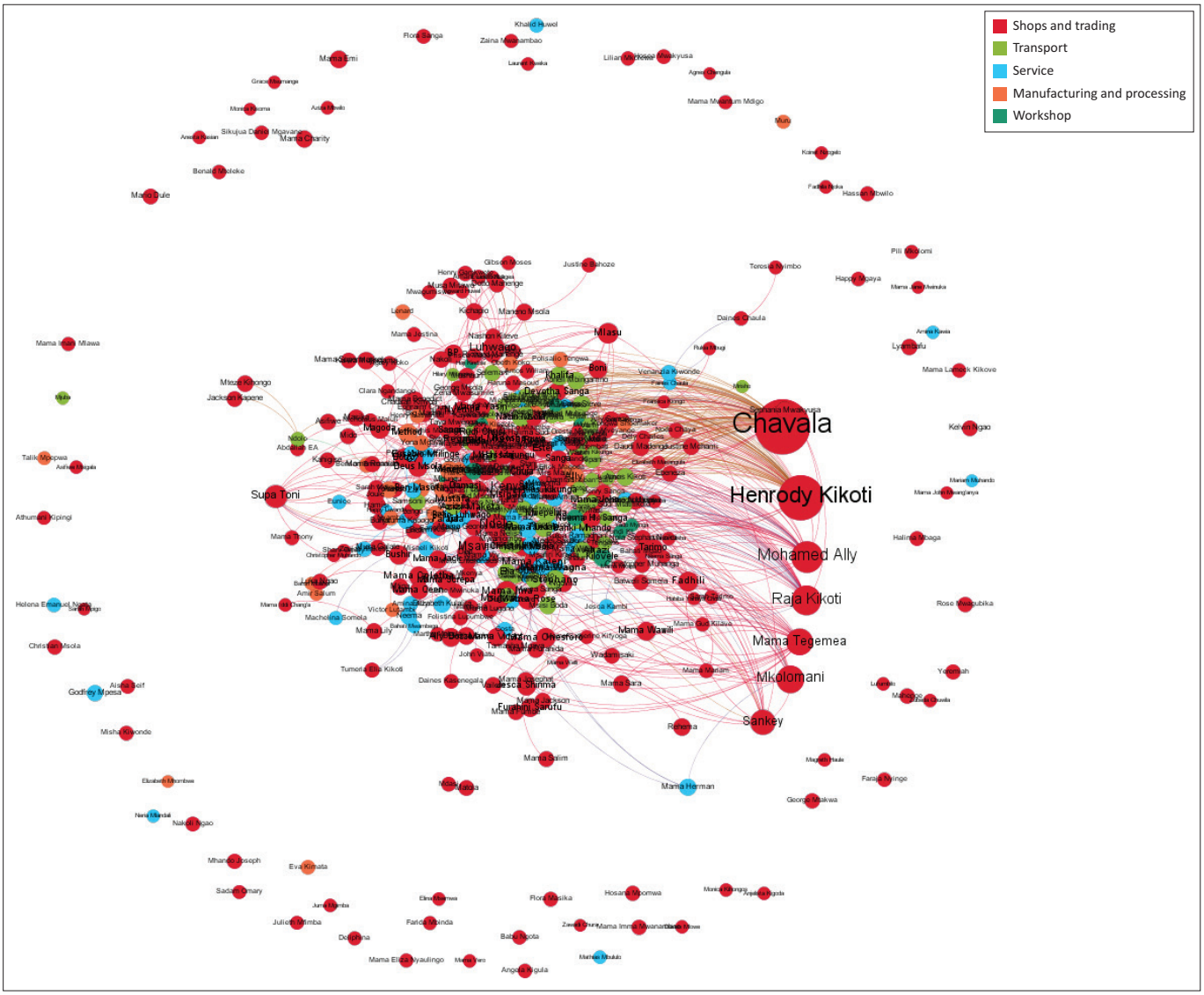


FIGURE 4: Embeddedness network ordered using Yifan-Hu proportional layout algorithm with node size representing the degree centrality and node colour representing business category.

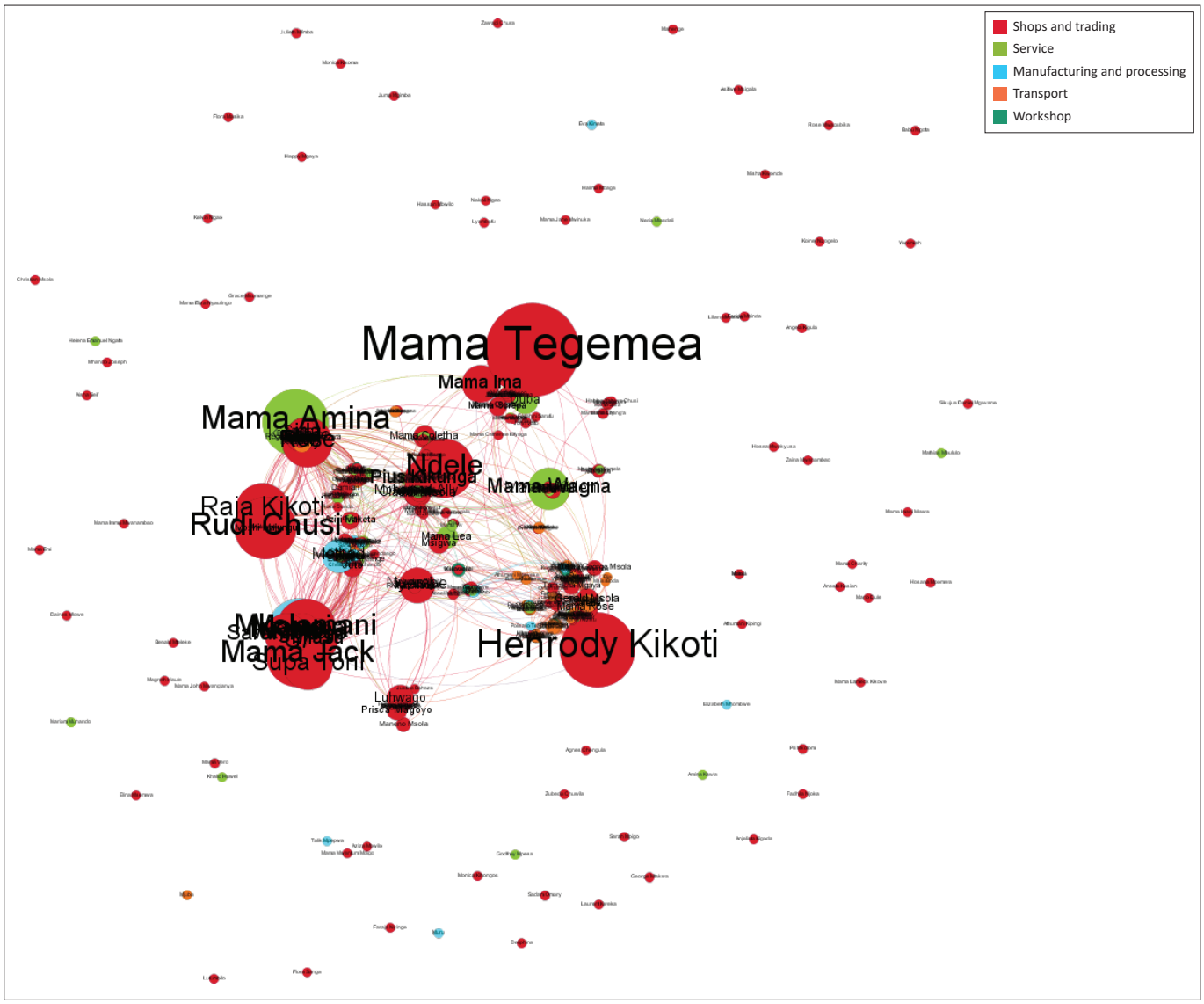


FIGURE 5: Brokerage network mapped using Openord layout with node colour representing business category, node size representing betweenness centrality and edge colour depicting location.

The role of social networks in business performance was examined using individual (owner) characteristics and business dummies as controls. Business performance was modelled using estimates of daily sales turnover and stock size measured in the Tanzanian shillings. Sales turnover and stock data were used as proxies for business performance because profits could not be obtained because of a lack of business transactional accounts. In modelling business performance, the ordinary least squares (OLS) method is commonly used because it provides a causal linear prediction of the social network effect on economic outcomes, holding other factors constant (Berrou & Combarnous 2011; Kuépié et al. 2016). The following regression was employed (Equation 1):

$$S_i = X_i'\beta + \propto N_i + \varepsilon_i \qquad \text{[Eqn 1]}$$

where: S is a vector for business performance for all categories of business, N is a vector of network indicators, which are network size measured by degree centrality and network influence measured by eigenvector centrality, all measured by α as a vector of coefficients of interest. The vector X provides other covariates and contains business owner attributes such as age, education and experience. The explicit equation of the model can be expressed as follows (Equation 2):

$$\begin{aligned} Y_i = {} & \beta_0 + \beta_1 Age_i + \beta_2 Sex_i + \beta_3 Education_i + \\ & \beta_4 HouseholdSize_i + \beta_5 Experiencee_i + \\ & \beta_6 BusinessCategory_i + \beta_7 Capital_i + \\ & \alpha_1 NetworkSize_i + \alpha_2 NetworkInfluence_i + \varepsilon_i \end{aligned} \qquad \text{[Eqn 2]}$$

The model diagnostics were conducted, and the results report robust standard errors for normality. Multicollinearity was tested using the variance inflation factor (VIF), and a mean VIF of 0.2 was reported, which is less than 10, indicating no multicollinearity between regressors. The model was also tested for endogeneity, and it showed that the robust score chi-square test was insignificant, which reports the factors to be exogenous, permitting for OLS regression instead of instrumental variable regression.

Ethical considerations

Before the survey, the researcher obtained necessary approvals from the Tanzania Ministry of Education, Iringa reginal commissioner, office of district commissioner, ward and township officer. The project was in conjunction with the values and principles of the ethical clearance obtained for project number 13-P02-TAN from the Research Ethics Review Committee of the Sokoine University of Agriculture on 09 Match 2017 (Ref. SUA/ADM/R.1/8/) and University of Copenhagen.

Results

Characteristics of the businesses in the emerging urban centres

The results presented in Table 1 indicate that more than 80% of the surveyed businesses were operating as sole proprietorships. Regarding formalisation, approximately 68% of the enterprises were not registered with any formal authority, such as the Business Registration and Licensing Agency (BRELA) and TRA.

In the large informal sector, many businesses were into easy-to-enter and exit ventures, such as shops and trading (Table 2). The majority (more than 60%) of the businesses were either general shops or in trade, which were also largely unspecialised. Most of these businesses were placed in the same category to represent a group of businesses that tend to be small in size with low investment capital, employ few or no formal workers and trade small and mostly unspecialised commodities (requiring little or no trained skills). Transportation[1] (*Bodaboda*, Bajaj, minibuses and trucking) and food-related businesses accounted for 53% and 35% of the businesses in the service category, respectively. About 34 businesses traded food crops such as tomatoes and other cereals, followed by vendor stalls and retail shops. Food processors accounted for 31% of businesses within the category of processing and manufacturing. Timber-related businesses, such as wood or log processing and carpentry, accounted for 19% as they benefited from proximate tree plantations in Mafinga and Mufindi districts.

Another dominant manufacturing-based business was the repair shops or garages and manufacturers of bamboo baskets and tomato packing materials. These workshops included small repair shops and garages for bicycles, motorcycles (most of which were symbiotically located near hardware stores) and motor vehicles. Some of the salient and emerging businesses observed were shoemaking, tractor-trailer manufacturing and tomato and paddy and/or rice processing factories.

Purchase and selling networks in and outside the emerging urban centres

More than half of the stocks sold by the surveyed businesses within the EUC were purchased from within the EUC. Moreover, about 80% of the product sales went to businesses and final customers within the EUCs. Among the goods purchased within the EUC, 15% were tomatoes and food items sold in vendor stalls. A high proportion of locally purchased and sold products indicates the expansion of intra-EUC trading. This reflects the available market potential for goods produced and sold within and outside the EUCs. A local retailer stated:

> '… it is easier for many of us to buy goods from our local wholesalers because travelling to Dar es Salaam to buy small sized stock will not be profitable as most of businesses here and nearby villages have small capital and the high risk of brokerage and theft/loss of goods while on transit makes it even more difficult …' (Participant 4, 28 years, male)

Ilula EUC was also revealed as market node for goods from surrounding villages, districts and regions, most notably agricultural products including forestry products.

An interesting observation was the growth of specialised lines of business, such as mini supermarkets, hardware stores, spare parts, electronics, furniture and fixtures, motorcycles and tricycles, traded to customers in the EUCs.

TABLE 1: Characteristics of emerging urban centre businesses.

Category	Description	Ilula	
		n	%
Business ownership	Private	419	91.29
	Family	30	6.54
	Partnership	10	2.18
Business registration status	Formal (registered)	146	31.81
	Informal (unregistered)	313	68.19

Note: The variation in the sample was attributed to nonresponses within the category.

TABLE 2: Category of studied businesses (N = 459).

Business category	Business type	*n*	Category %	% of total
Service		-	-	28.10
	Food and drinks	46	35.66	-
	Art and studio	2	1.55	-
	Hotel amenities	7	5.43	-
	Cleaning and beauty	1	0.78	-
	Transport	69	53.49	-
	Other services	4	3.10	-
Shops and trading		-	-	60.57
	Food crops trading	94	33.81	-
	Farm inputs	16	5.76	-
	Clothing	23	8.27	-
	Hardware	19	6.83	-
	Wholesale retail	4	1.44	-
	Vendor stall	75	26.98	-
	Retail shop	33	11.87	-
	Others	14	5.04	-
Workshop, manufacturing and processing		-	-	11.33
	Workshop or garage	11	21.15	-
	Packaging materials	11	21.15	-
	Timber works	10	19.23	-
	Food processing	16	30.77	-
	Construction	2	3.85	-
	Tailoring	2	3.85	-

Note: The variation in the sample is attributed to nonresponses within each category.

1.For ease of analysis, transportation and workshop business categories under this section are included in the service and manufacturing categories respectively, because they were considered as a less distinct business type. They are however considered as unique categories in other sections analyses.

Other specialised industrial goods, such as hardware, gas, timber, farm inputs, clothing and processed rice, were popular commodities from the EUC traded to the surrounding sub-villages and wards. Agricultural produce, mainly tomatoes, makes up a large proportion (84%) of goods sold outside the EUC, mainly to surrounding regions such as Dar es Salaam, the Coast region and other countries such as Kenya and Uganda.

Structure of business networks in emerging urban centres

Embeddedness in product exchange networks

Highly embedded businesses are known to have large market power and thus act as central links to access resources such as information for other businesses in the network. In this study, businesses in the shops and trading category, mainly hardware stores, wholesale and retail traders, and tomato traders, were highly embedded in the social network of product exchange, as portrayed in Figure 4. Most of these businesses sourced goods from a few general suppliers. The highly embedded businesses were also well connected to other businesses in the service, transport, manufacturing and processing categories. Apart from businesses in the trading category, three service-based businesses and manufacturing were highly embedded, mainly because of the linkages they formed with businesses in the tomato value chains. Interconnectivity with a variety of other businesses shows their influence and is also a benefit to businesses that can be realised through these connections to further expand their product markets.

A high level of embeddedness among these businesses translates into a high level of trust among businesses. In an interview, a representative from the association of businesses and retail shops reported the following:

> '… most businesses here are retail shops and obtain their products from popular wholesale shops. Some businesses buy their goods on credit because they are trusted to repay the shop owner in future and most businesses in the food market started by getting products on credit.' (Participant No. IL_2, 61 years, male)

Brokerage in product exchange networks

In the context of the brokerage of resources, the results are categorised based on four types of brokerage positions. In both EUCs, the gatekeeping position was occupied by businesses belonging to the shops and trading categories, such as wholesalers and traders of agricultural products, who were all highly connected with businesses outside the EUC. In Ilula, tomato brokers, traders, wholesalers and vendor stalls for household consumables played a gatekeeping brokerage role (tomato brokers here are identified as agents who mediate exchanges between tomato farmers and tomato traders or buyers, so the actual meaning of a broker differs from brokers as expressed in other contexts where the rest of the text like term is used such as gatekeeper, coordinator and liaison brokers). About six groups or clusters of tomato traders, wholesalers, tomato brokers, vendors stall and restaurants and/or food vendors were observed with at least one business being a major connector or broker of the cluster. As illustrated in Figure 5, brokers or gatekeepers were clustered based on the rate of product exchange recurrence. The two large actors with high normalised betweenness centrality as key brokers exerted a significant influence on the product network beyond the EUCs. It was also revealed that tomato traders and wholesale traders acted as representative brokers who played the role of linking businesses outside the EUC with those within the EUC. Information and resources from external actors or businesses linked by representative brokers engaged with tomatoes, wholesale trade, transportation and money transfer businesses are vital for business development.

Coordinator brokers – traders of wholesale-retail household consumable goods and restaurants – were observed to play leading roles in internally linking businesses in the EUC. Most businesses with medium and high levels of embeddedness are connected to many other businesses across different categories, such as retailers, transporters and service providers (e.g. local food vendors). The observation that similar businesses appear to link businesses internally reflects the low density and diversity of product networks, the implication of which is related to the lack of new information, innovation and subsequent constrained business development.

The liaison and itinerant brokerage positions are not presented in the network graphs (Figure 5) because of minimal role of institutions. The liaison brokerage position or role was played by public and private institutions such as National Microfinance Bank (NMB) and CRDB commercial banks, Mazombe Savings and Credit Cooperative Society (SACCOS), local government (Township Executive Officers office) and other government and non-governmental institutions such as the Tanzania Social Action Fund (TASAF), Bangladesh Rural Advancement Committee (BRAC), Vision Fund and Mama Bahati Foundation. Through interviews, public and private formal institutions provided knowledge and information to businesses in the EUCs through consultations and training. Itinerant or consultant brokerage positions were played by small financial intermediaries such as BRAC SACCOS. They only linked targeted business groups such as food vendors and vendor stalls.

Social networks and business performance

This study employed business sales turnover and stock size as a proxy for business performance assessment. The results of the OLS regression model presented in Table 3 and Table 4 show that the structure of business networks reveals a pool of trading potential. Similarly, increasing the network connectivity of business owners increases the likelihood of business development by increasing returns. The model results revealed that social networks positively influenced EUC business performance. The size of social networks, measured by

TABLE 3: Correlation matrix of social network, business, and business owner characteristics.

Characteristics	Eigenvector centrality	Significant level	Weighted degree centrality	Significant level	Age of respondent	Significant level	Years of education	Significant level	Total stock	Significant level	Business turnover
Eigenvector centrality	1.0000	-	-	-	-	-	-	-	-	-	-
Weighted degree centrality	0.8094*	0.0000	1.0000	-	-	-	-	-	-	-	-
Age of respondent	0.0106	0.8268	0.1966*	0.0000	1.0000	-	-	-	-	-	-
Years of education	-0.0308	0.5253	-0.0043	0.9295	-0.0895	0.0647	1.0000	-	-	-	-
Total stock	0.6157*	0.0000	0.6427*	0.0000	0.1230*	0.0178	-0.0346	0.5074	1.0000	-	-
Business turnover	0.1452*	0.0029	0.1692*	0.0005	0.1746*	0.0003	-0.0466	0.3422	0.0853	0.1042	1.0000

*, Significant at 5% level

TABLE 4: Ordinary least squares regression results on the influence of social networks on business performance.

Regressors	Log sales turnover		Log stock	
	Coefficients	Robust SE	Coefficients	Robust SE
Log age	0.150	0.477	0.470	0.325
Sex	0.790***	0.224	0.268*	0.151
Log education	0.123	0.222	-0.056	0.126
Log household size	-0.009	0.148	-0.056	0.119
Food-crop trading	1.330***	0.242	0.009	0.188
Wholesale and retail trading	-0.073	0.269	0.614***	0.214
Manufacturing and processing	0.401	0.477	-0.166	0.356
Transport	-3.376***	0.358	0.406	0.293
Log start-up capital	0.596***	0.066	0.694***	0.052
Log network size	0.484**	0.199	0.301*	-
Log network influence	0.546***	0.118	0.026	-
Log business experience	0.435***	0.120	0.184**	0.091
Constant	5.236**	2.086	1.996	1.399
No. of observations	366	-	325	-
F	45.3	-	12312	80.690
Prob > F	0.000	-	0.000	-
R-squared	0.5711	-	0.7089	-
Root MSE	1.4531	-	0.97875	-
Robust score $Chi^2(2)$	4.403	0.111	1.670	0.428
Robust regression (Wu-Hausman test F[2351])	2.129	0.120	0.829	0.438

SE, standard error; MSE, mean square error.
*, **, and ***, denote significance at the 10%, 5% and 1% levels, respectively.

weighted degree centrality, and network influence, measured by eigenvector centrality, had a positive and significant correlation with business stock size and sales turnover. As Table 3 shows, a percentage increase in the size of the social network (measured by weighted degree centrality) in the product exchange network increases the size of stock and sales turnover by 30% and 48%. Eigenvector centrality scores suggest that being linked to actors who are also well connected (with a high weighted degree centrality) increases business sales turnover by 55%. Moreover, a percentage increase in years of business experience was observed to increase the stock size by 18% and sales turnover by 44%. Increasing capital size was also observed to significantly increase sales turnover by 60% and stock size by 3%. Businesses owned by men were also more likely to increase sales turnover and stock by 79% and 27% compared to women-owned businesses.

Discussion

Small businesses in the study area were observed to be predominantly small-scale and operating within the informal sector, a phenomenon consistent with numerous regions in the developing world, as elucidated by Cassim et al. (2016) and Kiggundu and Pal (2018). Informality has been documented as a significant constraint on business development in developing countries, particularly in sub-Saharan Africa, as it impedes access to financial services and market information (Amponsah, Agbola & Mahmood 2021).

The structure of businesses in the EUCs conforms to Haggblade, Hazell and Reardon (2010) and Loison (2015), who elucidated that most small businesses that rural labour tends to enter are largely small-scale, unspecialised and operate in the informal sector. The growth of specialised businesses around EUCs indicates a diversification of product structure, which is characteristic of rural spaces. As also demonstrated by Roberts (2016), networks of specialised businesses are central to fostering small-town development and economies of scale, as evidenced in Vietnam and West Bengal. Thus, strengthening linkages through these businesses is fundamental for market performance and rural development initiatives (Wegulo 2018).

Social network analyses of embeddedness and brokerage in rural EUCs revealed the predominance of a limited number of business clusters that are primarily connected to dominant crop value chain enterprises in these areas, such as those related to tomato production. The investigation also observed more extensive information networks compared to product exchange networks, reflecting the significance of market information. This finding has substantial policy implications, highlighting the critical importance of promoting crop value chain commercialisation and transformation, which facilitate the establishment and development of ancillary businesses (Wu et al. 2022).

The observation that businesses in rural EUCs facilitated vertical and horizontal exchange with businesses in rural and other urban areas within and outside the country aligns with McFarland (2019) and Agergaard and Ortenbjerg (2017), who posit that economically marginalised rural businesses can be supported through the establishment of industry clusters and business networks. This approach has the potential to create a cascading effect in supporting rural and regional development by bridging the rural-urban divide. This inference is consistent with network theory and Granovetter's (1973) strength of weak ties theory, as elucidated by Groh et al. (2013), which suggests that geographically distant actors who are spatially separated play a more significant role in enhancing growth compared to close, strong bridges. Merrell et al. (2022) and Lamotte (2025) assert that connections with distant actors contribute substantially to business development, as the value

of goods traded increases and information acquired from such markets facilitates further exchanges and innovation.

The observation that local government, business organisations and financial institutions play a limited role in supporting product and information exchange networks contradicts the existing literature by Park, Baek and Lee (2025) and Xing, Liu and Cooper (2018), who elucidated the positive impact of institutions in creating a supportive environment via collaborative partnerships and promoting regional entrepreneurship. This discrepancy may be attributed to the nature of rural institutions, many of which are in their nascent stages of development.

Social networks have been demonstrated to positively influence the performance of rural businesses through an increase in turnover and stock size. These findings align with those of Ummah (2016) and Vanderelst (2015), who concluded that enhancing social network size and influence positively impacts business performance as the linkages broaden the resource base. Significantly, increasing connections with well-networked actors ensures access to information, knowledge, markets, customers and capital. These advantages drive business development through multiplier effects. Berrou and Combarnous (2011) and Kuépié et al. (2016) further elucidate that expanding the size of network linkages is positively associated with an increase in business productivity. An increase in experience contributes to enhanced knowledge of product combination and conducting business based on acquired knowledge of the markets.

Conclusion and policy implications

This study examined the effect of social networks on the business performance of small enterprises in EUCs of rural Tanzania. Through profiling EUC businesses, the Ilula EUC was identified as a central or focal point for commercial activities in rural areas.

The analysis of the structure of social networks in the EUCs revealed that they were predominantly constructed around the major crop value chain dynamics, particularly tomatoes, and were largely operating within the informal sector. The prevalence of small businesses in the informal sector presents an opportunity for policy intervention to facilitate investment and small business development through capacity-building and/or training and financial support, as these enterprises have the potential to absorb rural labour and contribute to economic transformation.

In an analysis of embeddedness and brokerage, the SNA revealed that a significant proportion of EUC products and information exchanges were concentrated around a limited number of businesses involved in retail, tomato trading and wholesale-retail operations. Although interconnectivity with other categories of businesses was extensive, access to market information, capital and innovation in business performance could not be enhanced by a few well-connected businesses.

The brokerage roles of linking businesses horizontally within the EUC and vertically beyond the EUC were also predominantly occupied by businesses trading crops and wholesale-retail businesses in both product and information exchanges. This presents an opportunity for policy intervention to support agricultural/crop value chain development initiatives that may also have spill-over and multiplier effects on the development of other businesses, such as manufacturing, and enhance rural-urban linkage dynamics. Furthermore, it necessitates the strengthening of the institutional environment, which serves as a support system for rural business networking. Institutions and organisations presumed to assist in relaying and supporting resource flow across businesses played a limited role. It is therefore imperative that policy options are formulated to strengthen institutions and create synergy between local business organisations, financial institutions and social groups to expedite rural and regional development.

The study determined that business networks are embedded within the social fabric and significantly influence business performance. This outcome suggests the need for policy interventions that encourage businesses to invest in internal and external subgroup networks with diverse business types, as geographically, EUCs provide leverage in accessing numerous resources along the rural-urban continuum.

This study has limitations, as it was conducted with business owners within purposefully targeted EUC (Ilula); thus, the inferences drawn cannot be generalised to other geographical areas. As an area for further research, a broader scope of information could be generated if the effects of online social media platforms such as Facebook, Instagram and LinkedIn were evaluated regarding their influence on rural business performance. To test the theoretical and empirical foundations of SNA, further study is also called to examine how social network attributes of businesses between rural and urban (metropolitan) spaces differ in influencing the development of small and medium businesses. While this study was done using a cross-sectional design, further study can be done to test the changing dynamics of rural networks.

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This article is based on data from a larger study. A related article focusing on 'Social networks and business investment in emerging urban centres in rural Tanzania' has been published in The *Southern African Journal of Entrepreneurship and Small Business Management* 17(1), a1094. https://doi.org/10.4102/sajesbm.v17i1.1094. The present article addresses a distinct research question, focusing on the role of social networks (strong and weak ties) in influencing rural business development through product and information flow and business performance.

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Competing interests

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Authors' contributions

S.A.N. was involved in project conceptualisation, investigation, supervision, providing resources, funding acquisition, writing of the original draft, validation, data curation and writing of review and editing. M.N.L. was involved in conceptualisation, methodology, formal analysis, project administration, investigation, writing of the original draft, visualisation, software, validation and writing of review and editing. F.T.M.K. was involved in conceptualisation, methodology, formal analysis, investigation, writing of the original draft, visualisation, software, validation and writing of review and editing. Y.T.B. was involved in methodology, formal analysis, software, visualisation and writing of review and editing.

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Data availability

The data that support the findings of this study are available from the corresponding author, S.A.N., upon reasonable request.

Disclaimer

The views and opinions expressed in this article are those of the authors and are the product of professional research. The article does not necessarily reflect the official policy or position of any affiliated institution, funder, agency or publisher. The authors are responsible for this article's results, findings and content.

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