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Chapter

Value Chain Analysis of the Street Food Enterprises in the Rural Towns of Vhembe District, Limpopo Province

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Abstract

This study sought to analyse the value chain of foods sold by street food vendors in the Vhembe district town of Limpopo province. Data were collected using mixed methods, including structured questionnaires administered via face-to-face interviews. Analyses of the value chain activities and actors were conducted among the stages of street food production. Overall, the enterprise sold commonly consumed street foods such as porridge, chicken, beef, and local vegetables, targeting government employees, school children, and daily town visitors. The value chain analysis showed that street food activity in the Vhembe district included purchasing, storage, production, and consumption. The main actors involved in the value activities of the street food enterprise were inputs suppliers, formal and informal traders, transporters, local authorities, and customers. The profit margin calculation highlighted that street food vendors purchasing inputs from the informal vendors without any added expense could make more profit than using formal traders. Future policy interventions should promote value addition along the food sold in the street, providing cold storage facilities closer to street vendors' stalls in the towns to encourage continued and safe production. The most prioritised production constraints should be addressed, such as access to finance, government support, and managerial skills.

Keywords: demographics, operation characteristics, street food enterprises, street vendors, South Africa

1. Introduction

The street food trade is an ancient practice [1, 2] common in several countries as a source of income. It provides inexpensive meals accessible to the population and represents the culture of typical and local food [3]. The World Health Organization [4] defines street food as foods and beverages prepared and sold by vendors on streets and other public places for immediate consumption [4, 5]. This definition emphasizes the retail location on the street, with foods sold from pushcarts, bicycles, baskets or

balance poles, or stalls that do not have permanent walls [6]. Millions of people depend on a wide variety of ready-to-eat foods and beverages sold and sometimes prepared in the street or public places. Charman et al. [7] conducted a microenterprise census of five working-class township settlements, demonstrating its solid economic basis in the trade of food, takeaways, and drink.

Moreover, informal micro-enterprises could address South Africa's unemployment challenges and stimulate economic growth in marginalized areas. Hence, it was noted that Maloney [8] could contribute through the business generation and transfer of skills and experience to informal workers. Despite some critical research on this topic, there remain significant knowledge gaps, especially on the value chain of street food that could create employment and transfer skills. Nevertheless, the increasingly recognised role of informal food services for food security, especially for poor urban dwellers [9], understanding activities, mechanisms, and the trade environment within urban townships remains limited [10].

Thus, street foods have important implications for consumers who enjoy these foods and street food handlers who handle and serve these foods [11]. However, increasing population, migration from rural to urban areas, an increase in the number of women engaging in gainful employment, inflation, and the breakdown of the joint family system have supported the growth of the street food sector.

Long distances to commute between workplace and home often compel individuals to eat food from commercial outlets. The significance of street foods in contributing to the food and nutrition security of workers residing away from home in small towns and cities is widely recognised.

Literature has noted a paucity of data on how the street food chain system is organized and operated for market nodes, governance, challenges, and food safety issues. Such information is crucial for understanding the sector, identifying growth opportunities, and supporting informal economy policies and programs. Along the street food value chain, problems such as poor infrastructure and lack of financial assistance hinder the possible benefits that the value chain actors should have attained. Therefore, there is a need to employ a value chain analysis (VAC) framework to understand the value chain of street foods in the Vhembe district [12, 13]. The value chain is a range of activities required to bring a product or service from conception through the different phases of production, transformation, and delivery to final consumers [14]. Then VCA seeks to understand how chain activities are organized, costs incurred, and benefits shared among chain participants. Its management is to add value and segment the market with differentiated products designed to increase profitability at all stages in the chain [14–17]. The value chain also deals with the institutional arrangement governing the activities, actors, their relationships, the linkages, and market prices in and out of each actor in the chain [18].

Porter [19] highlights that a firm's activities business unit is appropriate for constructing a value chain. Value chains are more complex in the real world and focus on systems and how inputs are changed into the outputs purchased by consumers [14]. In this study, we used the stages of street food used by Cortese et al. [16] (**Figure 1**), highlighting that a typical agricultural or food value chain consists of chain actors that transact a product as it moves through the value chain. These actors include input suppliers, farmers, traders, processors, transporters, wholesalers, retailers, and final consumers [16].

Limpopo province has the highest number of street food vendors, mainly concentrated in the Vhembe district ([20, 21]a). For this reason, Vhembe district was selected for this study to contribute to the body of knowledge on street food enterprise in the Vhembe district. Most street food vendors are found in public places such as taxi ranks

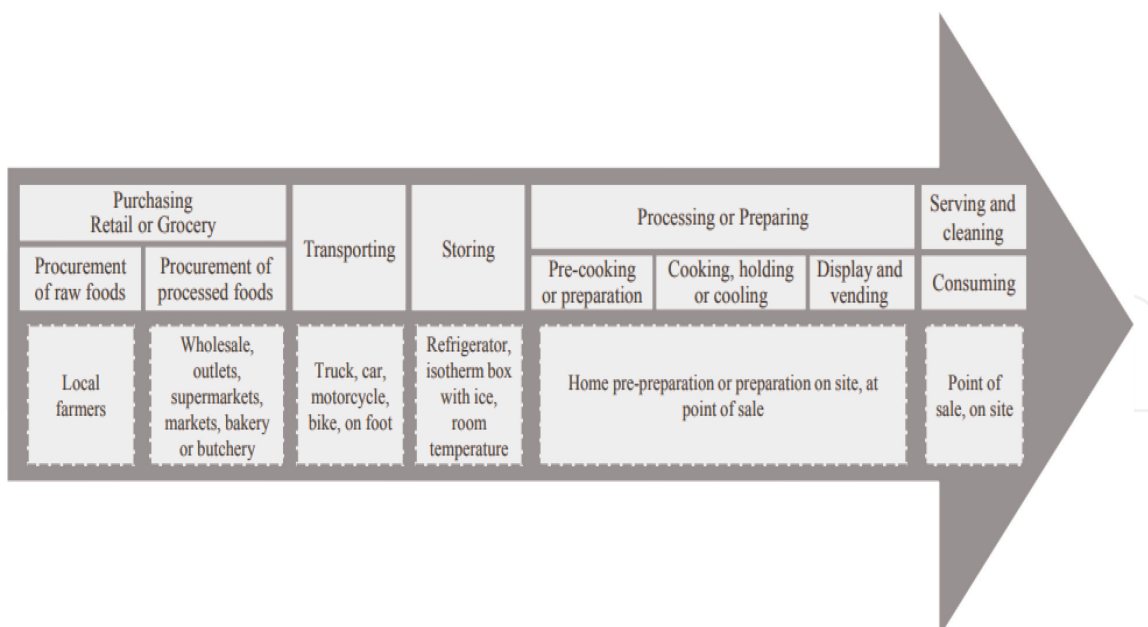


Figure 1.
 Stages of the street food value chain. (Source: [16]).

and the road [22–24]. The Vhembe district draws special attention in the province because of a high increase in cooked street foods [20, 21, 25]. The main objective of this study was to map and analyse the value chain of street foods in the Vhembe district. The study seeks to identify the major players and the linkages in street food vendors' value chain. Moreover, we determined the chain's value-added and associated costs from purchasing to consumption of street food vendors.

To achieve this, we used the six-steps VCA process by Porter [19] to explain the value chain activities of street food enterprises. The following steps were used in this study to conduct a VAC of the street food vendors in the Vhembe district rural towns: firstly, in our previous work [26, 27], we described and defined the product sold by the street food vendors in the Vhembe district looking at the operational characteristics of the street food vendors (Step 1). This study sought to analyse the value chain of foods sold by the street food vendors in the Vhembe district town of the Limpopo province. This was done by identifying the prominent value chain actors, mapping significant steps (Channels), and analysing the profit margin share of the enterprise using four different types of plate sold.

2. Material and methods

2.1 Study area

The Vhembe District Municipality consists of four local municipalities: Makhado, Thulamela, Musina, and Collins Chabane. Botswana in the west, Zimbabwe in the north, and Mozambique share the borders. It covers an area of 21,402 km² of mostly rural land. About 32.65% of South Africans live in rural settlements [28]. Due to the high level of unemployment and poverty, inhabitants of the district have developed several survival strategies, including the street food enterprise of major trading points within the local municipalities identified in the towns of Makhado, Thohoyandou, and

Musina, respectively. The informal sector in South Africa contributes 8% of the country's GDP and supports 27% of all working people. The Vhembe District has a population of 14,02,779 people, increasing from 12,94,722 in 2011. According to Community Survey, in 2016, most of these people resided in Thulamela (4,97,237), followed by Makhado (4,16,728), Collins Chabane (3,47,974) and Musina (32,009). Thulamela LM is the most populated Municipality in the district, while Musina LM is the least populated Municipality (Limpopo Provincial department 2021).

2.2 Field survey: sampling

The field survey was conducted in Makhado, Musina, and Thohoyandou in the Vhembe District of Limpopo province. The type of sampling used in this study was non-probability sampling, as the research population is unknown [3, 29]. We used convenience sampling to select 511 street food vendors enterprises in different regions of the Vhembe district, Limpopo Province of South Africa. The researcher established and maintained a complete list of the primary unit component from the Vhembe district's municipalities. However, the municipalities had no records in place of street vendors. From the intended population of street vendors, the sample size was determined based on Yamane's formula of the year 1969 [30, 31]. The formula states that at the significance level of 90%, the minimum sample size for the unknown population is 100 [30, 31].

A total of 511 street vendors from Musina (168), Makhado (36), and Thohoyandou (306) towns participated in the study. Only street food vendors selling ready-to-eat or cooked food participated in the study. A convenient sampling technique was used considering street vendors' work. Street food vendors were obtained from taxi ranks, along the main roads, industrial areas, malls, schools, and lastly, between residences' streets, especially in Musina town.

2.3 Data collection

Data were collected by trained enumerators led by the research team using a structured questionnaire through face-to-face interviews. The questionnaire captured socio-demographic characteristics, including age, gender, and education. The quantitative data was collected from the street food vendors by asking them to estimate the proportion of value flow. Additional information was captured on production, input sources, storage, transportation mode, institutional support, and distribution of profit margin. Where possible, figures were obtained through consensus by achieving a majority. Qualitative data was collected by employing interview with 54 street food vendors who were available. Additional information generated was stakeholders and their roles, mapping the stages of street food production. During the sessions, we explored why street food vendors could not affiliate with an association.

3. Results

3.1 Introduction

The purpose of VCA seeks to understand how chain activities are organised, the cost incurred, and the benefits shared among chain participants. This section of the paper reports on the activities conducted to determine the value chain of the street

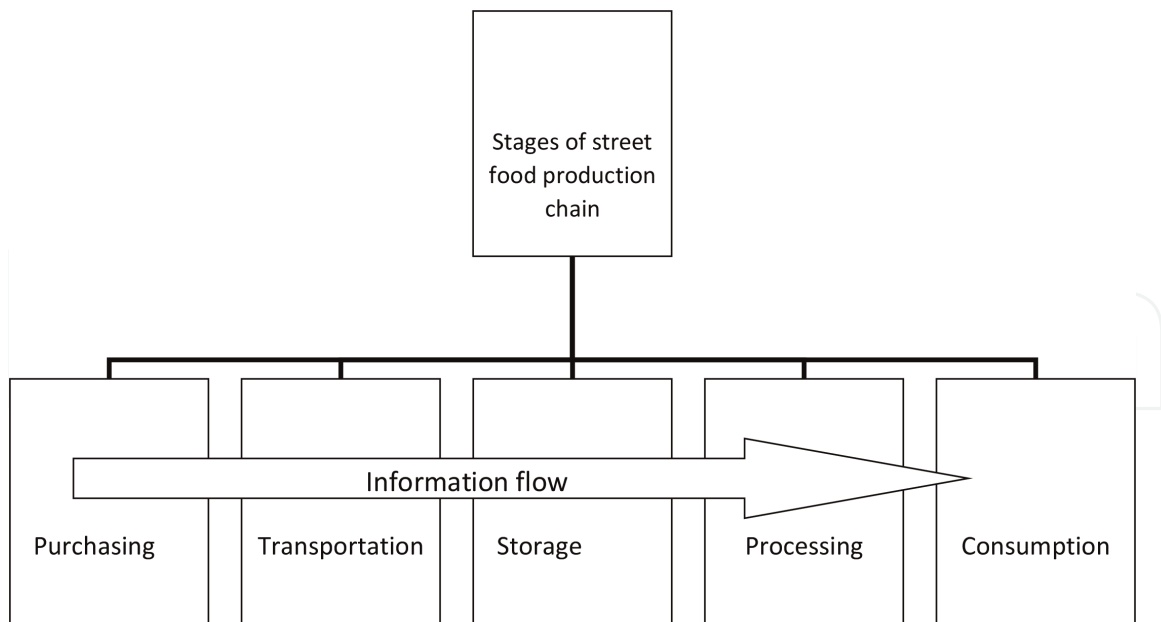


Figure 2.
Street food vendors food production chain activities.

food enterprises in the rural towns of the Vhembe district. A step-by-step method was used to analyse the street food enterprise. The following activities were conducted (1) identification of the marketing channels, (2) Mapping the value chain activities, (3) identification of the chain actors, (4) identifying value chain linkages, and lastly, (5) Determined the profit margin of street food vendors. The street food production chain activities in the Vhembe district are highlighted in **Figure 2**.

3.2 Description of the street food value chains

3.2.1 Marketing channels

Figure 2 shows the value chain channels identified amongst the street food vendors in the Vhembe district. The value chain activities of the street food vendors in the Vhembe District are undeveloped and straightforward, with no infrastructure. The main marketing channels identified are the input suppliers, transportation, storage, production, and consumption. The channels highlight that street food vendors have various food storage and processing places, from input suppliers to transportation to consumption. These highlights that the final product market of street food is consumers (government employees, school children).

3.3 Value chain analysis

3.3.1 Mapping the value chain activities

The value chain activities of the street food vendors start from purchasing, transportation, storage, processing, and lastly, consumption, depicting the flow value chain activities of street food vendors.

The street food vendors' value chain activities are explained in subsections 3.3.1.1–3.3.1.5.

3.3.1.1 Purchasing

Purchasing is the first stage of street food enterprises. During this stage, street food vendors purchase inputs from informal and formal stakeholders. The data showed that street food vendors purchase raw and processed products from informal traders such as bakkies/farmers/formal supermarkets. Raw products were reported to be mainly meat category were chicken—dressed cull layers constituted (88.8%) of the meat product purchased. Beef was reported at 68.3% with its associated Beef Offal at (14.3%).

From the vegetable category, the main raw product was Green Leafy Vegetables constituting (60.1%) purchased from hawkers using informal supply contracts. Maize meal by far was the most predominant raw product purchased (97.1%) from retailers because it happens to be a staple food in the towns, district, province, and the country at large.

Culled layers, and beef offal gives street vendors a competitive advantage since these products are a by-product being sold from major poultry and beef processing facilities [27]. The same applies to green leafy vegetables which are purchased from Bakkies or produced by street vendors in their back yards. Based on convenience the maize meal that is purchased gets augmented by by-products from maize processing facilities to create varieties, delicacies, and flavors (sour versus normal) of pap cooked the indigenous way. Also, these products mimic the indigenous and cultural meal that the customers mainly rural (82.2%), government employees (59.5%) and school children (41.5%) demand due to taste and value for money **Figure 3** [27].

3.3.1.2 Cost of inputs

The average monthly running cost of the inputs used to produce a plate of at least R45/30 of chicken or beef was estimated at R1800. On average, their daily cost of vegetables purchased from street food vendors or hawkers was R21.65, while vegetables from supermarkets cost R18.75–R51.00. Other food items purchased from the smallholder farmers included live chicken broilers with an estimated R180.83 daily. Street food vendors reported challenges such as a lack of continuous supply from street vendors/farmers and bakkie sellers; hence some of the inputs were purchased from retailers. On average, the cost of meat was between R188.00 and R279.00 from retail or supermarkets. [26] indicated the list of input suppliers that the street vendors in the study are used.

Inputs Supplier	Maize Porridge Supermakerts	Vegetables Supermarkets Hawkers Famers Own Production
Beef Supermakerts Famers Butcheries	Chicken Supermarkets Hawkers Famers Butcheries	Pork Famers

Figure 3. Main food items purchased by street food vendors from chain stores and suppliers.

3.3.1.3 Transportation of ingredients and pre-prepared food

The second stage of street food value chain activities identified is transportation. The mode of transport, distance, and time spent acquiring inputs by the street vendors from suppliers are reported in **Table 1**. The average monthly transport cost for all street vendors who used any transport was estimated at R340.00. More than half of the street food vendors (54.6%) walk to get their input suppliers, while public transport, such as taxis and buses, was used by 33.3% and 8.4%, respectively. Only 1.6% of street food vendors reported that suppliers deliver inputs. Very few street food vendors used private cars (4.1%). The longest distance travelled was more than 10 km (4.5%). However, most reported walking less than one kilometre (6.5%) and taking close to 10 minutes (31.8%) to suppliers.

3.3.1.4 Storage

Table 2 presents the frequency and associated percentages of street food vendors' storage practices. The primary purpose of the storage is to extend the product availability over a more extended period than if it were sold immediately after harvest. In this study, most street food vendors reported having a place to store their business

	Frequency (<i>n</i> = 511)	% of participants	Median
Amount paid for transportation (R)			340.00
Mode of transportation of food			
Walk	279	54.6%	
Taxi	170	33.3%	
Bus	43	8.4%	
Car	21	4.1%	
Suppliers' delivery	8	1.6%	
Distance to inputs suppliers			
Less than 1 km	33	6.5%	
1–5 km	11	2.2%	
6–10 km	11	2.2%	
More than 10 km	23	4.5%	
Time to walk			
less than min walk	163	31.8%	
11–20 min walk	93	18.2%	
21 and more minute walk	25	4.9%	
Time to drive			
5–10 min drive	30	5.9%	
11–20 min drive	30	5.9%	
More than 20 min drive	75	14.7%	

Table 1. Frequencies and associated percentages of mode of transportation and distance to inputs suppliers of ingredients and pre-prepared food for street food vendors.

Variables	Frequency	Percentage (%)
Availability of storage	<i>N</i> = 511	
Yes	357	70.0
No	154	30.0
Storage of stock	<i>N</i> = 357	
Home	97	27.4
Stall	75	21.2
Storeroom	108	30.5
Rented room	70	19.8
Other	4	1.1
Availability of access to on-site storage of processed food	(511)	
No	465	91.0
Refrigeration/freezer	46	9.0

Table 2.
Frequencies and associated percentages of street food vendor’s storage practices.

materials including inputs (70%). Of those who reported having a place to store their enterprise material and inputs, 27.4% indicated that they store them at home, while 30.5% had rented rooms close to their stalls. Less than ten percent had access to storage facilities like freezers (3.5%) and refrigerators (5.3%) when selling at the stall. Less than 10% of the street food vendors had access to a freezer/refrigerator to store processed foods close to their enterprise, which risked food safety. An indictment to the local authority was the fact that 91% had no availability of access to on-site storage and no facility of safe refrigerators and freezers. This is mainly because the street vending business is not regulated nor managed within the developments plans of local authorities.

3.3.1.5 Production/processing

Food processing is a critical stage in the street food value chain. It entails pre-preparation and preparation of different food items, as shown in **Figure 2**. Pre-preparation is vital because different foods need to be prepared in different ways. In this stage, food such as meat and vegetables should be prepared in different utensils to avoid cross-contamination. Only 3.7% in preparing foods from home and transported the ready-to-eat foods to the market. Pre-preparation refers to a stage during which street food vendors purchase food, and some activities are conducted at home. Food is transported to the site for the final stage of cooking or heating before serving.

In our previous work [26], we reported that vendors (93.3%) prepared food at the vending site. Three-quarters of the owners (74.5%) were prominent people cooking food, and very few were assisted by the employees (23.9%) or spouses (1.6%). Processing activities can be an important source of jobs and income for women. Hence, it is essential to note the street food enterprise's role. On average, SFV could at least be able to pay R1400 employees monthly. At the same time, others reported

spending more money on things such as electricity (R200) and gas (R430) weekly to produce food.

Predominantly cooked food was meat (98.8%) and Millie pap (stiff porridge) (97.1%), a South African staple food. Three quarters (75.3%) of the vendor's cooked vegetables and 34% were served as gravy and chakalaka (8.2%). The various meats cooked by the vendors were chicken (88.8%), beef (68.3%), beef tripe/*magulu* (14.3%), and beef sausage (5.5%), with very few street vendors selling fish (1.4%) or pork (2.2%). The median daily cost of meat was R400. The street food vendors cooked and sold two main starchy foods, mielie pap (97.1%) and rice (14.1%), at R70 daily.

3.3.1.6 Consumption/point of sale

Table 3 shows the frequencies and their associated percentages relating to the street vending target market and mode of marketing. The main street food consumers were mainly government officials and school children attending nearby schools. Rural customers who visit the town and spend some time in town also buy from street food vendors. Foods were either served at the stall or sold as takeaways. The study assessed the mechanisms street food vendors employ to sell their street foods. The results showed that 51 percent of the respondents sold their products to rural customers (82.2%) and school children (41.5%). Some street vendors reported their customers as government employees (59.9%) and middlemen (53.0%). The technologies used to market were call/WhatsApp (62.4%). Most street food vendors reported relying on face-to-face visits with customers to sell their foods. This method proved effective as per the saying “the proof of the pudding is in the eating”. Personal visits validate the taste, flavours, the look and the eating experience that customers prefer.

Variables	Frequency*	Percentage (%)
Target market		
Rural customers	415	82.2%
School children	209	41.5%
Government employees	300	59.5%
Middlemen	267	53.0%
Other	9	1.8%
Mode of marketing		
Personal visits	368	72.0%
Phone call/WhatsApp	319	62.4%
Recruit professionally	22	4.3%
Word of mouth	14	2.7%
Posters	3	0.6%
Nothing	7	1.5%

*Number of responses.

Table 3.
 Frequencies and associated percentages street food vending target market and mode of marketing.

3.4 Value chain stakeholders and their role along the value chain

Table 4 present the major stakeholders and their specific roles. Firstly, we identified critical functions. Secondly, the actors involved then their roles were also outlined. As highlighted earlier, one of the critical functions during purchasing was providing supplier input to the vendors. In this study, various actors identified as inputs suppliers (Supermarkets, farmers, butcheries, hawkers) were the most dominant among the identified inputs suppliers. The second important function noted was processing where street food vendors were the actors in the chain activities involved in processing foods either at home or at the stall. The other stakeholders identified in the study were the regulations and quality assurance role players such as the local Municipality and the Department of Health. Lastly, customers are also identified as role players because they are the consumers of the final product of the street food.

3.5 Business enabling environment

3.5.1 Institutional supports

Table 5 presents the types of institutions available along the street vendor's chain. To improve the competitiveness of the street food value chain, every actor or stakeholder has a vital role to play. The current study explored the institutions available

Step I	Step II	Step III
Critical function	Current/ potential actor	Specify role
Inputs suppliers (purchasing)	Main supermarket	Spar Supply raw and processed foods
		Boxer
		Shoprite
		OBC
	Farmers	Vegetables and meat suppliers (pork and broilers)
	Butchers	Supply all types of meat
	Street vendors/ hawkers	Broiler and vegetable suppliers
Processing	Street food vendor	Production, cleaning, marketing, and selling
Consumption	Customers	Buy products
Regulations and quality assurance management	Local government or municipality Department of health	Provision of the following services: <ul style="list-style-type: none"> • Area management and placement • Collect waste/clean and issuing of permits/licenses • Policy amendments
Other stakeholders	Media	Advertise business on social media platforms such as WhatsApp and Facebook

Table 4.
Major stakeholders involved in the street food and their roles.

Institutions	N	%
Formal lenders (banks)	4	1
Informal lenders	5	1
NGO	8	2
Associations	45	9
Local municipality	202	38
Department of health	235	46
Inputs suppliers	17	3

Table 5.
 Frequencies and associated percentages on the types of institutions available along the street vendors' value chain.

that provided support services to ascertain which institutions were present and accessible amongst the street food vendors to provide various forms of support to the value chain actors. There is a relationship amongst the value chain actors, which was established based on spot markets (actors negotiate on price, quantities, and other requirements directly at the market).

3.5.1.1 Financial institution

The current study highlighted a poorly developed street food enterprise financial system. Although formal and informal institutions were available to assist street food vendors financially. Street food vendors could only get assistance in the form of loans from money lenders (1.0%) and very few banks (0.8%). Input suppliers (street food vendors/bakkie sellers) (3.3%) could also provide street food vendors with credits for a later return. Those who borrowed money from the informal money lenders (loan sharks) highlighted conditions including paying money later with interest, while some indicated paying back the money the same day without interest.

3.5.2 Regulations and quality assurance management

3.5.2.1 Street food vending associations

About nine percent of the street food vendors were members of associations or unions. Most of the representatives were from the street food vendor's associations at a local level. The in-depth interviews explored why street food vendors have not been affiliated or part of the street food association. Among the identified reasons, street food vendors were unaware of any association (6.9%). In contrast, others had no reason why they were not part of the association (27.5%). Street vendors who were not members of any representations provided the following reasons: "I am a foreigner," while others indicated that "Associations only represent taxi drivers." Others highlighted that they were not aware of available associations of street food vendors. At the same time, most (64.1%) did not have reasons why they were not part of an association. The low participation rate of SFVs in associations is because these latter ones often lack clear organizational goals.

Regarding the street food vendors who were members of an association (8.5%), most street food vendors could not tell the role played by the associations, while some

indicated that associations provide them with business advice and assist with solving problems. Street food vendors indicated that the street food vending association needs assistance to improve service delivery for their businesses to be competitive. Amongst the recommendations, the street food vendors include training, assistance in building better markets, and provision of adequate space for business operations. The street food vendors recommended access to quality infrastructure as the primary service improvement intervention for improving street food enterprise.

3.5.2.2 Local government

Based on the in-depth interviews conducted regarding the roles of the available stakeholders. Street food vendors highlighted that the main role of the local government (Municipalities) (38.3%) was to provide services such as allocation of placement or vending sites and management of vending spots. Local municipalities' role also included issuing permits or selling licenses at an allocated premise. However, not all street food vendors had licenses, as others had no interaction with officials except the suppliers and the customers. The local Municipality's role was to clean and collect waste daily. Other stakeholders who played a role in the street food sometimes the Department of Health (46.0%). They provided certificates of acceptance to sell cooked foods to street food vendors. However, not all vendors reported interacting with them to obtain the acceptance certificate to sell street food. Few vendors noted that NGOs indicated that they sometimes provide training from the NGOs.

3.6 Distribution of profit margins along with inputs to suppliers of street food vendors

3.6.1 Cost, output, and revenue

Table 6 shows the estimated profit margins and street food vendors' inputs suppliers.

3.6.1.1 Computation of cost, output, and revenue

We computed profit margin and ratio to determine if street food enterprise production was profitable in the study area. Four different types of plate production (chicken and beef meat) were used to compute the cost of production. Profit margin (*PM*) was calculated as the difference between the cost of production (*R*) and selling price OR revenue (*R*) (expressed as $P = R - C$). The percentage profit margin (*G*) was computed as the profit (*P*) divided by selling price OR revenue (*R*) (expressed as net sale-cost of goods)/net sale. Generally, street foods are sourced from the supermarkets and informal markets such as bakkies sellers/street vendors and farmers. The description of the activities done by the value chain actors, from the suppliers of the inputs to consumption (sales), was used to estimate the variable costs and returns.

Computations were performed per type of plate sold from different street food vendors daily. A typical plate sold by the street food vendor consists of meat, pap, green leafy vegetables served with a stew of tomato/onion. We used the two most cooked meat in this study to determine the profit margin, as shown in **Table 6**—the distribution used for daily production of chicken and beef plate profit margins from supermarkets and informal traders.

Product inputs suppliers	Production and marketing cost	R/unit	Total (R)	*Profit margin
Scenario 1: Inputs from formal traders (supermarkets/butcheries) with no labour required	Inputs production variable cost (veg, beef and maize meal) (IPVC)	49 + 279 + 70	398	78%
	Expenses (transport) (E)	11.3	11.3	
	Sales (selling price × total produced) (S)	43 × 44	1892	
	NI = S – E	1892 – (398 + 11.3)	1482.7	
	Profit margin = NI/S	1482.7/1892	0.78	
Scenario 2: Inputs from formal traders (supermarkets/butcheries) with labour	Inputs production variable cost (veg, beef and maize meal) (IPVC)	49 + 279 + 70	398	76%
	Expenses (transport, labour/day)	11.3 + 47	58.3	
	Sales (selling price × total produced) (S)	43 × 44	1892	
	NI = S – E	1892 – (398 + 58.3)	1435.7	
	Profit margin = NI/S	1435.7/1892	0.76	
Scenario 3: Inputs from informal traders (bakkies sellers/street vendors/farmers) with no labour required	Inputs production variable cost (veg, live chicken and maize meal) (IPVC)	21 + 180.83 + 70	271.83	76%
	Expenses (E) (transport)	11.3	11.3	
	Sales (S) (selling price × total produced)	40 × 30	1200	
	NI = S – E	1200 (271.83 + 11.3)	916.87	
	Profit margin = NI/S	916.87/1200	0.76	
Scenario 4: Inputs from informal traders (bakkies sellers/street vendors/farmers) with labour	Inputs production variable cost (veg, live chicken and maize meal) (IPVC)	21 + 180.83 + 70	271.83	72%
	Expenses (transport, labour/day)	11.3 + 47	58.3	
	Sales (selling price x total produced)	40 × 30	1200	
	NI = S – E	1200 – (271.83 + 58.3)	869.87	
	Profit margin (PM) = NI/S	869.87/1200	0.72	

*Profit margin: $\text{sale} - \text{expenses} / \text{sales} \times 100$

Informal input suppliers are when street food vendors buy their inputs from local farmers/street vendors/bakkie sellers.

Table 6.
Estimates of street vending profit margins.

To determine the street food vendors' profit margin, we used the formula: Formula; profit = price of plate × total plate sold/expenditure. Therefore, it was calculated as follows, profit margin (PM) = net income (NI)/sales.

- a. Where $NI = \text{sales (total plate sold} \times \text{price of a plate)} - \text{expenses (inputs cost from supermarkets} + \text{cost of transport} + \text{labour)}$.
- b. Formal markets referred to street food vendors purchasing inputs from the supermarket.

3.6.1.2 Profit margins in the four scenario mapped

Four scenarios/channels were used to estimate profit margin from purchasing inputs from the formal and informal markets cost. Considering the difference between the price of chicken and beef sold in the informal markets and supermarkets, all street food vendors made a profit even though the profit margins differed.

- a. **Scenario 1:** The findings of marketing Scenario 1 highlight that when purchasing inputs from supermarkets and no labour is required for the production, street food vendors could make 78.0% of profit on a beef based plate considering the expenses and sales of the day.
- b. **Scenario 2:** If Street food vendors purchase their inputs from the supermarket and require labour for daily production, the vendor's profit margin could be 76.0%, for beef-based plate considering the expenses and sales of the day street food vendors. This highlights that even if street food vendors purchase their inputs from supermarkets, they do make enough profit with or without the extra service labour.
- c. **In Scenarios 3 and 4,** street food vendors purchased inputs from informal traders. The difference was that in Scenario 4, street vendors have at least one assistant paid. However, the two scenarios highlighted that street food vendors purchasing their inputs for daily production could still make enough profit, on a chicken-based plate which was 76% for scenario 3 and 72% for scenario 4, respectively.

4. Discussions

4.1 Structure of the current street food value chain in the Vhembe district

This study aims to analyze the value chain of foods sold by street food vendors in the Vhembe district town of the Limpopo province. This was done by identifying the prominent value chain actors, institutions governing the chain, and key factors and challenges affecting the success or failure of the value chains for street foods. The street food value chain, faces several constraints [24, 32, 33], and this study confirms such findings. The value chain of food sold on the street is short, with no infrastructure. Complete value chain actors are linked in the chain processes necessary for transforming and transporting raw materials from suppliers to consumers. The activities during this period included purchasing, transportation, storage, production, and consumption. These activities of the food production chain in the current study were similar to a study by Cortese et al. [16], where they highlighted that in street food enterprises, the chain of activities starts from the acquisition of raw materials to

service to the consumer a step which was earlier proposed by Barro et al. [34], as **Figure 1** illustrates.

4.2 Market channel

The first marketing channel was from the informal traders (i.e., street vendors/hawkers) to street food vendors traders. The other marketing channel was formal traders (i.e., supermarkets/wholesalers) and street food vendors. The end market of street food is domestic consumption.

Like other studies in South Africa and developing countries, street food vendors purchase their inputs from other vendors. Adeosun, Greene, and Oosterveer [35] also noted that most vendors stock their raw food materials to prevent having to go to the market daily. Street food vendors also buy copious quantities to prepare for a day until their stock get finished as a coping mechanism to deal with waste and food safety. This was corroborated by other studies conducted in India [36, 37]; Ghana [38] and Sabbithi *et al.* [39] in India. It was also established that Street Food Vendors relied on local food value networks with both the formal and informal upstream value chain [40]. A dualist position was noted in the current study whereby street food vendors' inputs were sourced from direct sources such as bakkie/street vendors and the local supermarket.

4.3 Value chain activities

4.3.1 Value chain actors

VCA of street food enterprise in the Vhembe district is simple and undeveloped with little infrastructure. The main actors in the value chain were input suppliers (smallholder farmers, traders/retailers, street vendors/hawkers) and consumers. The current study showed that while street food enterprise is embedded into informality, selling cooked foods in the rural towns highly relies on inputs from formal sector enterprises in the form of agricultural producers, wholesalers, and retailers (**Figure 4**).

4.3.1.1 Inputs suppliers

Among the current study's chain actors were the inputs' suppliers. Input suppliers bring together a range of products and present them in a way that is convenient to customers. According to Porter [19], these are related and supporting industries. Suitable suppliers of inputs are crucial for sustainable production and where traceability, environmental concerns, and quality assurance are involved [41]. Moreover, in other developing countries, there is a dualistic relationship between the formal and informal food sectors in exchange for inputs supplies [42]. Street food vendors currently have a direct relationship with supermarket because food cooked by street food vendors are commonly sold in the supermarket, indicating guaranteed and increasing demand for street food in the Limpopo Province. Tawodzera and Crush [43] study found that location informed purchase for 49%, followed by price (42%), and quality (9%). However, Senyolo *et al.* [44] some informal traders in the Limpopo province have established relations to some supermarkets (such as SPAR, Boxer, Pick and Pay and OBC, Shoprite) selling cooked food mainly by the street food vendors, including the green leafy vegetables. These findings collaborate with other studies in the country

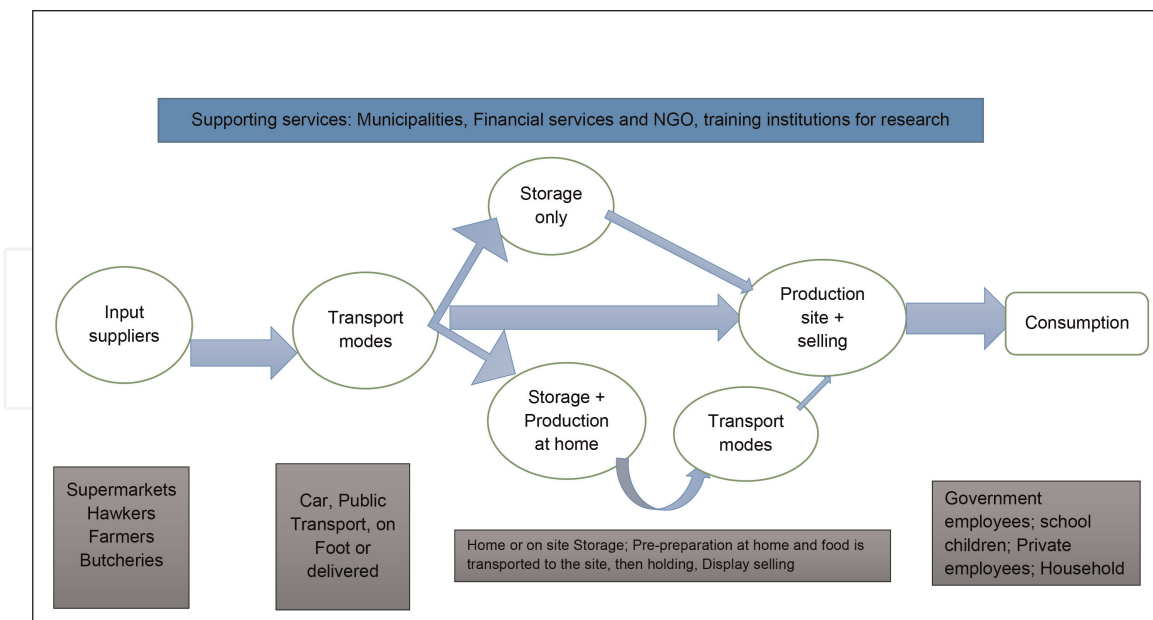


Figure 4.
Presentation of identified street food chain activities.

[45] . Moreover, Tawodzera and Crush [43] noted 22% of households rely on the agricultural production of their products. Contrary to the current study where very few street food vendors highlighted using their own produce for the vending instead relied on others for their enterprises.

The informal traders in the study supplied green leafy vegetables and live chickens to the street food vendors at a reasonable price to the formal traders for better profit margins.

4.3.1.2 Consumers

According to a survey by FAO [46], approximately 2.5 million people across the globe consume street foods every day. Most consumers are between the ages of 26–35 years, out of which most are single males away from home. Moreover, other essential categories of consumers include children, students, and office workers [11]. Charman *et al.* [7] also noted that residential micro-enterprises such as street vendors serve immediate resident consumer demands, primarily for essential fast food. Like the current study, street food enterprises' main customers mainly were people who travel to the rural town searching for work and school children during their lunch breaks. This study also noted that street food vendors generated demand for services provided by formal sector public and private actors, including transportation and formal shops, as reported by Roever and Skinner [47]. In Cape Town Hill *et al.* [48], most street food consumers are single black males with some high-school education and matriculated. Moreover, the patterns of consumption of street food daily and two to three times a week by 38% and 43.3%, respectively.

4.4 Stakeholders' relationship in the street food chain (institutional support)

Thuy *et al.* [49] stated that the availability of various stakeholders in a value chain, such as intermediaries and traders, adds value to the value chain of a product. As the

small scale of value chain linkages is prominent in the cities. The current study highlighted a relationship between the suppliers of the formal and informal inputs. However, street food vendors were the primary buyer of inputs from these different suppliers. The formal and informal street food input suppliers could establish a relationship that would benefit the street food enterprise by stabilizing input prices [44]. Thus, contributing to the distribution of the product in a geographic term.

4.4.1 *Financial institutions*

Food vendors also introduced some innovations to improve the food supply in the urban area. Haleegoah *et al.* [24] indicated that if street food vendors are given an opportunity for financial assistance, there could come up with innovative improvements in the daily operations of their enterprises. In the current study, street food vendors were limited due to a lack of financial support from recognised institutions such as banks and the government. Osei-Mensah *et al.* [32] found that inadequate managerial skills and financial constraints negatively affected the gross margin ratio. This shows the extent to which a lack of support and cooperatives is given to street food vendors in the Vhembe district.

Government legislation, regulations and policies can constrain value chain upgrading, amongst other ways, by setting trade barriers for production materials and production technology, limiting the flow of information, national and international, by imposing unfavourable taxes, and denying infrastructural investments that would benefit value chains.

Even though street food vendors noted concerns that inputs sold from the formal traders are expensive compared to the informal traders. In the current study, we observed poor institutional support for street food vendors along the value chain of street food. In previous publication [26, 27], we highlight that street food vendors have agreements amongst those selling vegetables whereby they take inputs on credits to pay after the sale, something absent from the formal retailer as street food vendors are not allowed to make any credits from the formal institutions. The study highlighted the support of the informal sectors such as transport because most street food vendors used public transport to fare the input to their stalls [40].

4.4.2 *Regulatory and quality assurance institution*

4.4.2.1 *Street food vending organizations*

Inability to sustain associations had been identified as a challenge to food vending [24], which our findings corroborate. This has prompted the establishment of innovation platforms in the street food enterprise for which studies and other training could be carried out. **Table 4** reports the roles and functions of the available affiliated associations. However, in-depth interviews explored why street food vendors have not been affiliated or part of the street food association. Among the identified reasons, street food vendors were unaware of any association (6.9%). Studies have shown that only a few vendors were known to be part of an association [24, 32]. Moreover, Wills [28] states that the absence of organisational goals could be the main reason for these associations' not thriving among food vendors.

As a first step towards recognition, street food vendors should constitute themselves into -organized associations that would enable them to develop a code of

practice for their businesses or constitute a forum for interaction with the relevant authorities.

4.4.2.2 Local government

The most common problem with street vending is issues with local authorities [24, 32, 33, 50, 51]. In the current study, we observed non-compliance by street food vendors to obtain necessary documentation before operation. While on the other side, street food vendors highlighted that there is neither support nor interaction between street food vendors and the local authorities to ensure proper street food value operations.

A collaboration between the street food vendors and the relevant stakeholders, such as the local Municipality, should be strengthened. Haleegoah *et al.* [24] also indicated that this poor interaction between the authorities and the street food vendors creates conflict among the stakeholders; thus, city planners should designate appropriate areas within the towns for local food vending could enhance compliance with safe and environmental regulations.

4.5 Regulations and quality assurance management

Although Roever and Skinner [47] indicated the importance of policies, laws, standards, regulations, and institutional support services forming the chain environment in the street food value chain for better performance, street food vendors do not consider obtaining specific requirements, including certification before vending and obtaining a certificate of acceptance for selling foods to the public (REF-SA). This practice is common in other African countries, such as Ghana, a street food vendor requires medical screening and certification before vending [38]. However, this health demand seems unsuccessful as it is noted in Ghana and South Africa that street food vendors are unaware of their requirements before establishing an enterprise.

Like the current study, only 38.3% and 46.0 of the street food vendors were aware that they needed to engage with the local Municipality and the department of health to obtain a license to operate as street food vendors in the Vhembe district. In line with this, other studies [52] have shared similar views, where most of the food vendors interviewed had no health certificates but operated as vendors. Therefore, vendors must adhere to high hygiene standards when dealing with food.

4.6 Profit margin and value shares

The current study highlighted that street food vendors purchase inputs from formal and informal traders. A higher profit margin was obtained in purchasing goods from the formal retailers on a beef-based plate at 78% profit margin and 76% with extra labour. However, the profit margin percentage, made at the current production cost purchases from the informal traders was 76% profit margin and 72% with extra labour. According to Poojara and Dhanesh [11], street food vendors have a minimal profit margin and are incentivized to keep expenses low by utilizing low-quality ingredients and disregarding costly hygienic practices. Factors such as the cost of labor and the other expenses contributed to the distribution of different profit margins of various plates sold. Vendors with no added costs, such as labor costs, make more profit than those with labor. Similar trends were also observed by Sugri *et al.* [53], where it was indicated that

additional attributes, and climatic conditions could increase the input cost from the suppliers and those purchase might have a lower return.

5. Conclusion and recommendation

The profit margin percentage analyses revealed that street food vending enterprise productions were profitable. The profit margins were 72–78% depending on the costliest meat product in the plate. Beef-based scenarios seem to fetch better profit margins (76–78%) based on the higher prices and increased number of plates sold. The chicken-based profit margins were at the range of 72–76%. The price per plate were lower with a smaller number of plates sold. There should be improved linkages between the local authorities, street food organizations, formal (formal and informal), and financial institutions to the street food vending enterprise with a collective profit motive.

In addition, measures should be put in place to solve the street food vending constraint affecting their operation, such as lack of access to finance, poor infrastructure and lack of managerial skills, and the cost of inputs. If street food vending enterprises could be organized aligned with roles of various actors, this could minimize the risk of failure of the street food enterprises sector. Due to the high demand for street food and its affordability in rural towns, authorities such as the department of health should assist street food vendors to minimize the risk of food safety along the chain. For rural and peri-urban communities street food vending could be a vehicle for improving the population's nutritional status and reduce hunger.

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Conflict of interest

The authors declare that there are no conflicts of interest in the publication of this research paper.

Disclosure

The authors take full responsibility for any errors.

Abbreviations

NGO	Non-governmental organisations
SFV	Street food vendors
SPSS	Statistics package for social sciences
VCA	Value chain analysis

VC Value chain
SWOT Strength weaknesses opportunities threats

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