

Supporting inclusion of small, medium and micro enterprises (SMMEs) in foodtech in South Africa

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1. Introduction

The growth of food technology (foodtech) is increasingly becoming an important pathway to development and economic transformation. Foodtech³ broadly captures any technology applied to the way food is produced, processed, sold, distributed, or served.⁴ Foodtech holds the potential to contribute towards tackling several ‘grand challenges’ simultaneously. These include tackling ‘Zero Hunger’ (Sustainable Development Goals (SDG) 2) by improving access to food; ‘Industry, Innovation and Infrastructure’ (SDG 9) by improving efficiency in food systems through real-time data, distribution services, simultaneously driving hyper-personalisation and better understanding of the needs and behaviour of customers; and ‘Decent work and Economic Growth’ (SDG 8) by increasing participation and the value addition potential of SMMEs (small, medium and micro enterprises).

In South Africa, many levels of food value chains are highly concentrated. In food and beverages manufacturing, for instance, the largest 20 enterprises contribute to 50% of income. Concentration levels are even higher within specific narrower product markets.⁵ In the grocery retail sector, five large supermarket chains control 64% of the national market.⁶ These high levels of concentration are reflective of the high barriers to entry in many markets, which are exacerbated for SMMEs. With limited participation by SMMEs in the South African economy, and persistently high unemployment levels (especially for informal and low-income workers) at over 30% in 2020⁷, foodtech offers opportunities for greater inclusion and integration of SMMEs and associated employment in food processing, packaging, nutrition, food software, delivery, retail and catering value chains.

The main objective of this research brief is to demonstrate new value propositions that emerge with advances in foodtech for SMMEs, and to provide recommendations to promote inclusion of SMMEs into foodtech. We develop a novel ‘rapid assessment framework’ (RAF) that allows for the assessment of opportunities, challenges, value creation and value capture strategies for foodtech SMMEs. This brief draws from a forthcoming working paper on this topic.⁸

2. Categorising foodtech segments

We categorise foodtech into two broad segments: a vertical segment, wherein foodtech is identified and defined according to functions or tasks; and a horizontal segment, which are complementary service segments. Horizontal services are essential for the functioning of the vertical foodtech segments but are not exclusive to foodtech. Different forms of foodtech in vertical and horizontal segments are described in Figure 1.

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³ This is different from ‘AgriTech’, which represents technological innovations with the potential to bring about improved agricultural techniques and practices for increased agricultural productivity and output (see also das Nair and Landani, 2020).

⁴ das Nair and Krishnan, 2020. Combating Covid-19: The promise of foodtech in SA. Daily Maverick, 24 May 2020.

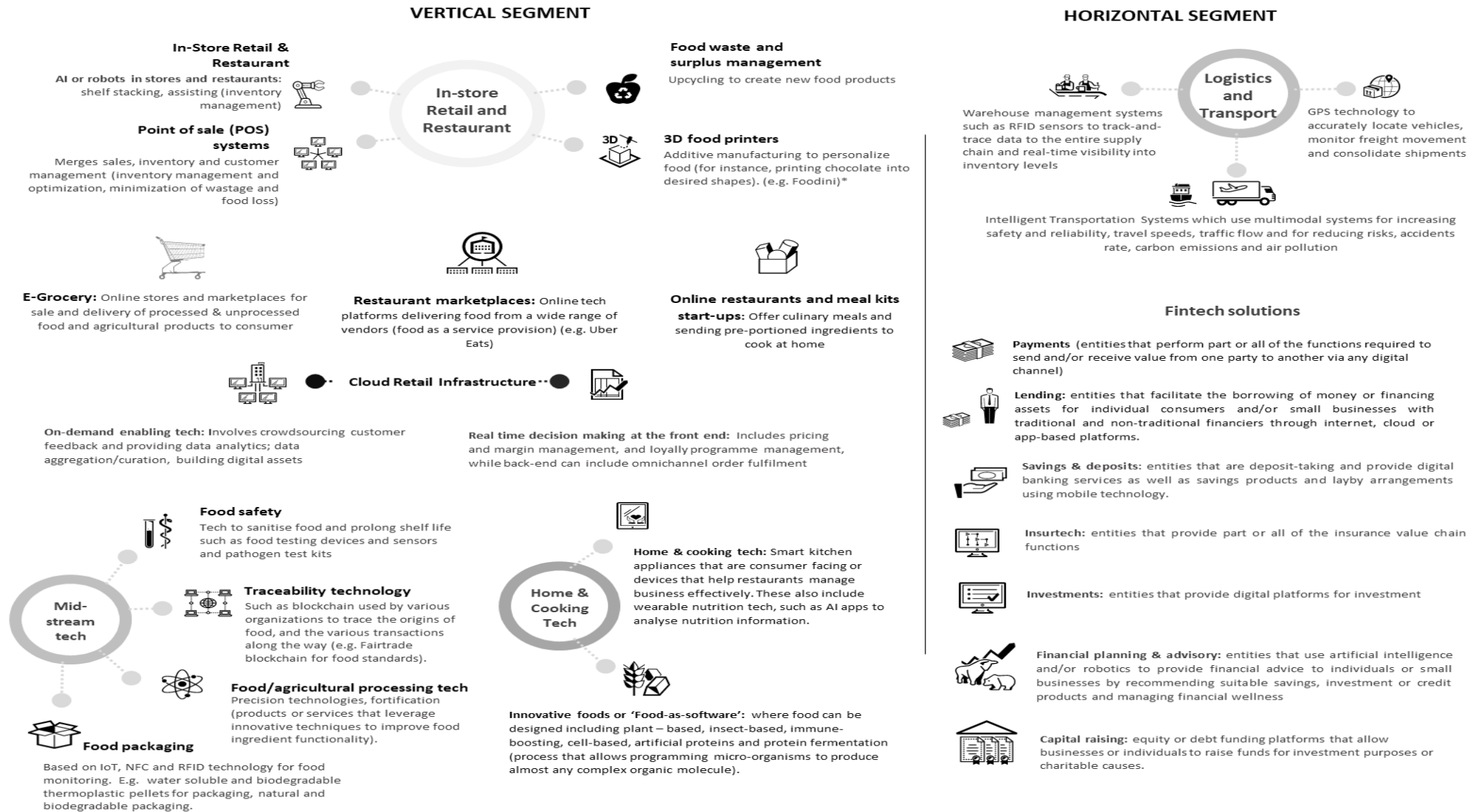
⁵ StatsSA, 2017. Manufacturing industry: Financial, 2017. Report No. 30-02-03.

⁶ Competition Commission of South Africa, Grocery Retail Market Inquiry Final Report, Non-Confidential, 2019, available at <http://www.compcom.co.za/wp-content/uploads/2019/12/GRMI-Non-Confidential-Report.pdf>

⁷ StatsSA, 2020, <http://www.statssa.gov.za/?p=13758>

⁸ Krishnan and das Nair, 2021 (forthcoming), Supporting inclusion of SMMEs in foodtech in South Africa. CCRED Working Paper.

Figure 1: Vertical and Horizontal foodtech segments



Source: Authors' construction

3. Foodtech landscape in South Africa

South Africa has one of the fastest growing foodtech industry in Africa.⁹ We collate a novel dataset of 135 formal firms who have been in operation at least since 2018¹⁰ to better understand the foodtech landscape in South Africa. From this dataset, we flesh out the most prevalent vertical segments of foodtech within the country. These include start-ups and incumbent firms, comprising digital and omnichannel firms (Table 1).

Large incumbents appear to be more active in the e-grocery segment, while start-ups and mid-sized firms are more active in restaurant marketplaces.

Table 1: Foodtech vertical segments in South Africa based on our compiled dataset (as of 2020)

Foodtech by vertical segmentation	No. of firms	% of total number of firms ¹¹	Employee ranges	Food coverage
E-grocery	40	32	Start-ups: 0-50; Mid-sized established firms: 101-250; Incumbents/large firms: 500-10,000	Processed groceries, fresh fruit and vegetables, wines and spirits
Restaurant marketplace	78	56	Start-ups:0-50; Mid-sized established firms: 101-250; Incumbents/large firms: 500-10000	Hospitality, catering, food processing, restaurants
In-store retail and restaurant tech	7	5	Start-ups:0-50 Incumbents: 500-3000	Retail technology
Cloud retail infrastructure	47	34	Mid-size firms: 101-250	Developer Application Programming Interfaces (APIs), Information technology, cloud computing, machine learning, data visualization, geospatial, Software as a services (SaaS)
Mid-stream technologies	6	4	Start-ups and mid-sized: 0-100	Warehousing, geospatial, transport
Home and cooking tech & Online restaurants meal kits	2	1	Start-ups: 0-50	Kitchenware, meal kits
Innovative foods	10	7	Mid-sized and incumbents/large firms: 51-250	Nutrition, proteins, biotechnology

Source: Authors' compilation from LinkedIn, Agfunder, Crunchbase and Tracnx

3.1 E-grocery and restaurant marketplaces

We focus on the first two vertical segments in Table 1: e-grocery and restaurant marketplaces. Both are broadly part of food e-commerce, which offers both physical as well as digital modes of service delivery.

E-grocery

Most food e-commerce occurs through platforms. These essentially provide intermediation services across the different sides of a digital market. Firms that participate in e-grocery and restaurant marketplaces are often therefore referred to as 'platformised firms'. Food e-commerce platforms operate at either Business-to-Consumer (B2C) or Business-to-Business (B2B).

⁹ Frost and Sullivan (2018), African B2C eCommerce Growth Opportunities, Forecast to 2020, Global Digital Transformation

¹⁰ Authors' compilation from LinkedIn, Agfunder, Crunchbase and Tracnx, through key word searches of 'foodtech + South Africa'; 'food tech'; 'food delivery'; 'food platforms'. See Krishnan and das Nair, 2021 (forthcoming) for details.

¹¹ Due to overlaps of the functioning of firms across foodtech segmentations, the percentage of total does not add up to a 100, as there has been double counting.

B2C e-commerce is defined as businesses that sell goods and products directly to the end customer, typically via a website with an online shop front or an online marketplace. South Africa's B2C e-commerce as a percent of total retail market sales stood at 1.9% in 2019, compared to 0.5% in Kenya, and 3.3% in Nigeria (Euromonitor, 2020). E-grocery B2C firms range from the large, well-established supermarket chains (e.g. Shoprite's CheckersSixty60, Pick n Pay through Bottles, which it now owns, and Woolworths Online, etc.) which offer growing e-commerce and delivery options, especially since the COVID-19 pandemic, to small niche providers (e.g. Faithful to Nature, providing organic products, and Zulzi, Sir Fresh and Green Butler, which offer online fresh produce delivery, to less formal spaza shops) who are also starting to use platforms to reach customers. These players frequently use third party service providers for home and business deliveries, such as Uber Eats and Netflorist.

Business-to-business (B2B) e-commerce in turn operates by providing products from one business to another, through either marketplaces or online auctions. For instance, even in the informal 'spaza' shop space in township areas, apps like Vuleka and Spazzap have been developed. These offer ordering systems that help spaza shop owners purchase goods collectively from manufacturers, and allow them to build credit profiles to buy stock on credit. Uber Connect, a relatively new product offering in South Africa that allows users to send packages through the app, also supports B2B models (see case studies below).

Restaurant marketplaces

Restaurant marketplaces include virtual (ghost/ cloud) kitchens or physical restaurants selling to customers either directly online, or omnichannel, or through aggregators or tie-ups with logistic providers (B2C), and businesses that sell to other businesses (B2B) such as to the hospitality sector, other restaurants and virtual marketplaces.

Examples in South Africa of B2C restaurant marketplaces include virtual kitchens such as The Ghost Kitchen, SmartkitchenCo, The Slick Restaurant Group, Saffron Kitchen, and The Dark Kitchen,¹² which although small, have emerged as a business model in South Africa. Prepared, prepacked and frozen ready-to-eat meal delivery services, particularly those that are marketed as healthy meals, have also mushroomed with the growing health trends amongst middle-to-high income consumers (e.g. FitChef, Fitfood4u and Clenergy).

B2B restaurant marketplace models that on-sell to other businesses include those that sell ingredients or partly-cooked food to other restaurants, catering businesses and small businesses for re-sale to end consumers.

3.2 Value chain mapping of actors in food e-commerce and restaurant marketplaces

E-grocery and restaurant marketplaces consist of a mix of traditional value chain actors (e.g. brick and mortar companies), as well as platform-related actors. Below we highlight three categories of actors (Table 2), both actual and potential, who are important to e-grocery and restaurant marketplaces. Understanding who these actors are and how they are linked is critical to value chain mapping and the first step in the Rapid Assessment Framework (RAF) undertaken in Section 4.

¹² <https://www.businesslive.co.za/fm/life/food/2020-08-27-the-rise-of-the-dark-kitchen-trend-in-sa/>, accessed on 28 March 2021

Table 2: Value chain actors in e-grocery and restaurant marketplaces in South Africa

Ecosystem of actors	Actors in South Africa
CORE NETWORK: the most direct links to a firm participating in an e-commerce platform	
Direct customers	Household consumers (high, middle, low income)
Direct subcontractors and suppliers	Wholesalers, retailers (small, medium, large), SMMEs (in food and beverage processing), spaza shops, cloud/ghost kitchens, other intermediaries
Distribution and logistics partners	Food aggregators, logistics and transport specialists (e.g. Bidvest, Vector Logistics, KLM Food, Barloworld Logistics etc.)
Workers / labour/ employees	Delivery workers, workers in-house for cooking, packaging, cleaning companies
BUSINESS NETWORK: secondary actors who are connected to core network actors	
Platform providers and operators	Platform owners (e.g. Takealot) and operators including software and hardware developers
Service providers	Data processing centres/web service providers/mobile money, food advisory services, local computing services, Application programming interface (API) developers
Service partners and operators	Network/telecom operators (e.g. Vodacom, MTN, Cell C, Telkom etc.)
Fixed Asset/machinery providers	Kitchen related mechanisation, food catering equipment suppliers
Sources of capital	Local: Commercial banks, government departments through support programmes, development finance institutions; International financial actors and donors; the World Bank, the United Kingdom (UK) Department for International Development (DFID), FAO, foundations (e.g. Bill and Melinda Gates, Syngenta, Microsoft, Google); Donor funding in this region is also applied in the form of incubation spaces and business development training; Other private financial actors; such as venture capitalists, angel investors, private equity and debt financing.
Trade and industry associations (global and local)	E.g. GSMA representing global interest of mobile operators; In South Africa, for example, there are numerous industry associations in different food value chains e.g. SMME association, Milk SA, Fruit SA etc.
EXTENDED NETWORK: may or may not be directly connected to the firms participating in e-commerce platforms, but are critical to the functioning of e-commerce	
Universities, technical and vocational education and training (TVET) and research organizations	Crucial actors in facilitating human capital development and as spaces for incubating talent. E.g. Food and Bev Sector Education Training Authority (SETA); Wholesale and Retail SETA; and other key public institutions like the Council for Scientific and Industrial Research (CSIR).
Government agencies and regulatory bodies	Various regulations that apply to food products such as the Foodstuffs, Cosmetics and Disinfectants Act and the Agricultural Product Standard Act, as well as cross-cutting bodies such as the South African Bureau of Standards, International Standards Organisation. Other cross-cutting regulatory bodies include the Competition Commission.
Social media/advertisers	Facebook, Instagram, WhatsApp
Other competitors	Offering similar value propositions or related
Continental and Global organizations and regulatory bodies	Supra-national unions such as the African Union have pushed for digital 'ag' investment as part of the Comprehensive African Agricultural Development Programme Agenda 2063. Intergovernmental organisations such as the UN, the World Trade Organization (WTO) and the Organisation for Economic Co-operation and Development (OECD)
NGOs	Local: e.g. Oxfam, Boost Africa, Umgibe, Black Sash, Food Forward etc.

Source: Authors' compilation

4. Rapid Assessment Framework (RAF)

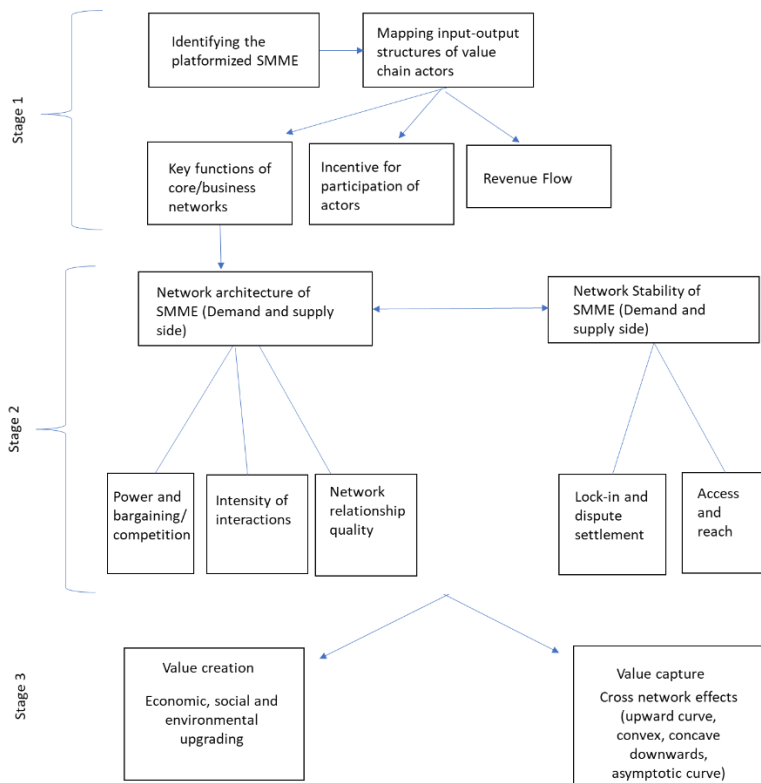
Much of the current research on foodtech is disparate, without an overarching framework on how best to map, and measure the quality of new emerging networks and value chains, and how to evaluate new forms of value creation and capture for ‘platformized SMMEs’ participating in different models of food e-commerce. By developing a ‘rapid assessment framework’ (RAF), we aim to provide a quick tool to:

- Assess the complex demand and supply side networks that are formed for platformized SMMEs (value chain mapping);
- Unpack the quality of network relationships (including the power structures, competition, and stability that have emerged);
- Evaluate the value creation and capture trajectories (cross-network effects) of platformized SMMEs.

A benefit of using the RAF is that it enables one to understand network complexities and value capture/creation both ‘*within SMMEs*’ by delving into opportunities and challenges faced by a specific SMME and ways in which SMMEs can be supported; and ‘*across SMMEs*’¹³ by facilitating comparisons between various SMMEs in the same sector, to gauge relative performance.

In this brief we focus on ‘within SMMEs’ and deep-dive into two case studies. We apply the RAF for B2B models specifically in e-grocery and restaurant marketplaces as these offer a growing opportunity for employment and expansion of SMMEs¹⁴, and are insufficiently explored in South Africa. We use the RAF to develop early findings with minimal bias, at lower costs and in a short timeframe. This framework can be used to examine platformized SMMEs in the digital food sector more broadly, and further validated with larger survey studies.

Figure 1. Three stages of the rapid assessment framework (within SMMEs)



Source: Authors' construction

¹³ See Krishnan and das Nair, 2021 (forthcoming) for further details on ‘across SMMEs’.

¹⁴ See also Roberts and Vilakazi, 2020. Regulating Digital Platforms for Economic Development: Critical Priorities for South Africa and the lessons from international competition cases, <https://www.competition.org.za/ccred-blog-digital-industrial-policy/2020/8/5/regulating-digital-platforms-for-economic-development-critical-priorities-for-south-africa-and-the-lessons-from-international-competition-cases>

4.1 Stage 1: Demand and Supply-side mapping of the value chain

Value chain mapping determines the input-output (I/O) structure of each task and the various stakeholders involved.¹⁵ In each case study in Section 5, we map the value chain for the selected ‘platformized SMMEs’ to determine the I/O structure of core, business and extended network actors that they are connected to. Mapping the I/O structure of the value chain enables understanding of the key functions, incentive for participation of different actors, as well as the types of transactions that occur between actors (e.g. the types of inputs demanded, key tasks involved and revenue flow between actors). Since platformized SMMEs are under investigation, it is critical to acknowledge that the selected SMMEs are both a supplier of services, as well as a user/consumer of services and serve multiple businesses and consumers physically as well as digitally. Thus, value chain mapping requires accounting for both the supply and demand sides, where the SMME is a supplier of services when catering to end customers, and where it is a consumer of services when purchasing services from suppliers respectively.

4.2 Stage 2: Mapping and measuring the architecture and stability of networks of SMMEs in food e-commerce models

While mapping the I/O structure is essential, it does not account for the quality of the relationships or networks on the demand and supply side for the platformized SMME. It is important to unpack the relational nature of networks which facilitates understanding the cohesion, cooperation or contestation, power structures, and trust between SMMEs and other related network actors in the value chain (Gereffi 2019; Neilson et al. 2018¹⁶). This is operationalized through two main pillars network architecture and network stability

Network architecture consists of three sub-pillars: power and bargaining/competition, intensity of interactions, and quality of networks. Network stability consists of two sub-pillars: lock-in and dispute settlement, and access and reach. Finally, each sub-pillar consists of multiple micro-pillars which differ when the platformized SMME is demanding services/products (demand side) or supplying services/products (supply side) (see Table 3).

Table 3: Network architecture and stability

Network Architecture (main pillar)		Micro indicators demand side	Micro indicators supply side
Sub-pillar 1: Power, bargaining and competition	Demonstrates symmetric power relations (control over resources) between platformized SMMEs and other network actors within the value chain; lack of symmetric relations may result in possible abuse of market power by core or business network actors in digital markets that create barriers to entry for SMMEs or lead to their exclusion	(1) input offerings (and costs) (2) services offerings (and costs)	(1) change in customer base; (2) service delivery performance; (3) market share; (4) main competitors
Sub-pillar 2: Intensity of interactions	Repeated interactions are shown to foster cohesiveness and building cooperation between actors	(1) interactions with suppliers (cooperative vs contested); (2) intermediaries; (3) supplier support	(1) changes in interactions with customers
Sub-pillar 3: Network relationship quality	Measures the quality of information transmitted and types of transactions (e.g. tech transfer) that occur between platformized SMMEs and core/business actors	(1) ease/difficulty to negotiate with suppliers; (2) financing; (3) knowledge transfer; (4) capabilities; (5) hiring skilled professionals	(1) complaints; (2) trust with customers

¹⁵ Frederick, 2019. Global value chain mapping. In: Handbook on global value chains. Edward Elgar Publishing.

¹⁶ Gereffi, 2019. Global value chains and international development policy: Bringing firms, networks and policy-engaged scholarship back in. *Journal of International Business Policy*, 2(3), 195-210; Neilson, Pritchard, Fold & Dwiartama, 2018. Lead firms in the cocoa–chocolate global production network: an assessment of the deductive capabilities of GPN 2.0. *Economic Geography*, 94(4), 400-424.

Network Stability (main pillar)		Micro indicators demand side	Micro indicators supply side
Sub-pillar 1: Lock-in and dispute settlement	Increased dependency on certain suppliers/ service providers causes locking into certain relationships which may be exploitative, ultimately leading to trust creation or reduction	(1) ease of finding alternative suppliers; (2) negotiation and trust building	(1) dispute settlement procedures; (2) customer support provisioning
Sub-pillar 2: Access and reach	Barriers or ease of expansion and access to consumers, productive resources and scope of enlarging the scale of operations	(1) support provision; (2) quality of enabling environment	(1) access to new customers; (2) quality of available infrastructure

Note: A detailed list of indicators under each sub-pillar is provided in Krishnan and das Nair, 2021 (forthcoming)

Source: Authors' construction

The questionnaire administered to SMMEs (along with qualitative interviews) enables eliciting a simple 'score' for each of the two main pillars. The following steps are undertaken to score 'within' platformized markets:¹⁷

- In the questionnaire, each sub-pillar has a set of micro-indicators, binary in nature i.e. yes/no responses.
- Each micro-indicator within each sub-pillar are given a maximum score of 1 if the response is positive, and a minimum score of 0, if negative.
- The share of micro-indicator positive responses for each of the network architecture sub-pillars are then assigned equal weights (0.33). For example, if 1 of the 4 micro-indicators (supply side) within the sub-pillar of power, bargaining and competition, is positive, the sub-pillar is given a value of 1/4 (share of positive responses), and assigned the weight of 0.33. The sub-pillar is then given a score of 0.0825 ($0.33 \times 1/4$).
- Similarly, the micro-indicators within sub-pillars of network stability (demand and supply side) are scored 1 or 0, then the share of positive responses are assigned equal weights of 0.5 for each network stability sub-pillar. Equal weights are assigned because it is at this stage, absent further research, difficult to distinguish the relative importance of one indicator over another. We note this as a limitation in our simplistic scoring system. Many studies however, e.g. WEF digital readiness Index and the Human Development Index, use equal weights. Others, such as the Services Trade Restrictiveness Index (STRI) of the OECD uses expert judgment. As we develop the RAF through application in future cases, weightings can be altered according to which factors may impact more on SMMEs.
- The total score for network architecture is calculated as a weighted index (summation of the sub-pillars) under both demand and supply sides of network architecture and similarly for network stability (see Table 4). The maximum score for network architecture can range from 0 to 1, similarly for network stability. The weighted sum is then divided into four quartiles. This creates a spectrum to interpret the weighted scoring system. A weighted index score between 0-0.25 suggests low network architecture and network stability; values between 0.75-1 indicate high network architecture and stability.

Table 4: Network scoring method

Scores	Total scoring range	Low	Relatively Low	Relatively High	High
Network Architecture – Demand side	0-1	0-0.25	0.25-0.5	0.5-0.75	0.75-1
Network Stability – Demand Side	0-1	0-0.25	0.25-0.5	0.5-0.75	0.75-1
Network Architecture – Supply side	0-1	0-0.25	0.25-0.5	0.5-0.75	0.75-1
Network Stability – Supply side	0-1	0-0.25	0.25-0.5	0.5-0.75	0.75-1

Source: Authors' construction

¹⁷ Details of RAF methodology is given in Krishnan and das Nair, 2021 (forthcoming)

4.3 Stage 3: Measuring value creation and value capture trajectories

Value creation accounts for the possibilities of transforming inputs (e.g. data, raw materials, and intermediary goods) into products that can be monetized for commercial use. Value creation by SMMEs is essentially the ‘upgrading potential’ or value added performed by the SMME as a result of the platformization. It is assessed through three modes: i) Economic value-added (improving products, and processes to engender value addition- which includes total productivity, reputation capital, asset building, and spill-overs ¹⁸; (ii) social value-added (modifying labour outcomes including labour productivity, improving quality and quantity of jobs (including for women))¹⁹; and (iii) environmental value-added (resource efficiency, and waste reduction in production and consumption practices).²⁰ Value creation in our framework is measured in terms of annual changes (arithmetic or geometric mean of changes) from the year of inception to the current year.

Value capture is the uneven distribution of value created. It is measured at the cross-network level (or network effects accounting for demand and supply sides) to account for cross-platform externalities created by SMMEs on customers; and on SMMEs by their suppliers. This allows us to understand the net value generated by the platformized SMME. Value capture for SMMEs is positive when there is a simultaneous improvement in the network architecture and stability of the SMME in relation to demand and supply side; along with value gained by SMMEs through interacting with suppliers and consumers (economic, social and environmental upgrading). This signifies an ‘upward sloping’ curve. However, there can be three other scenarios where the gains are limited, depicted first by a ‘convex curve’ where value improvement starts slowly before picking up the pace; second by falling or ‘downward concave’ curve, where both value and network architecture/stability are falling; and finally an ‘asymptotic curve’, where diminishing value is seen. Value capture can be mapped along these curves.

5. B2B case studies from South Africa

In this section, we apply the RAF to two case studies in the South African context (Sections 5.1 and 5.2). Primary data collection for the case studies was conducted through in-depth interviews and questionnaires with platformized SMMEs under the vertical segment. This was complemented with interviews with horizontal service providers (fintech-blockchain SMMEs) (Section 6) and government officials as part of the Intergovernmental Fintech Working Group (IFWG) (see Section 6). These are key business and extended network actors.

5.1. Case study of SMME 1 (restaurant marketplace)

SMME 1 is a virtual kitchen and food delivery firm that can be categorised as a restaurant marketplace (see Section 3). From the demand side, it is a consumer of products and services from core and business network actors. From the supply side, it provides virtual kitchen offerings as a type of restaurant marketplace. SMME 1 operates out of a modular shipping container that is leased from manufacturers for a period of one year (and then renewed). It has been running since 2012 and provides home-style cooking for catering, events and professionals. Its main customers are middle and lower-middle income consumers in urban areas in Johannesburg and surrounding southern suburbs (mainly Meredale, Mondeor, Ridgeway, Winchester Hills, Suideroord, and Melville).

¹⁸ Krishnan, 2018. The origin and expansion of regional value chains: the case of Kenyan horticulture. *Global Networks*, 18(2), 238–263.

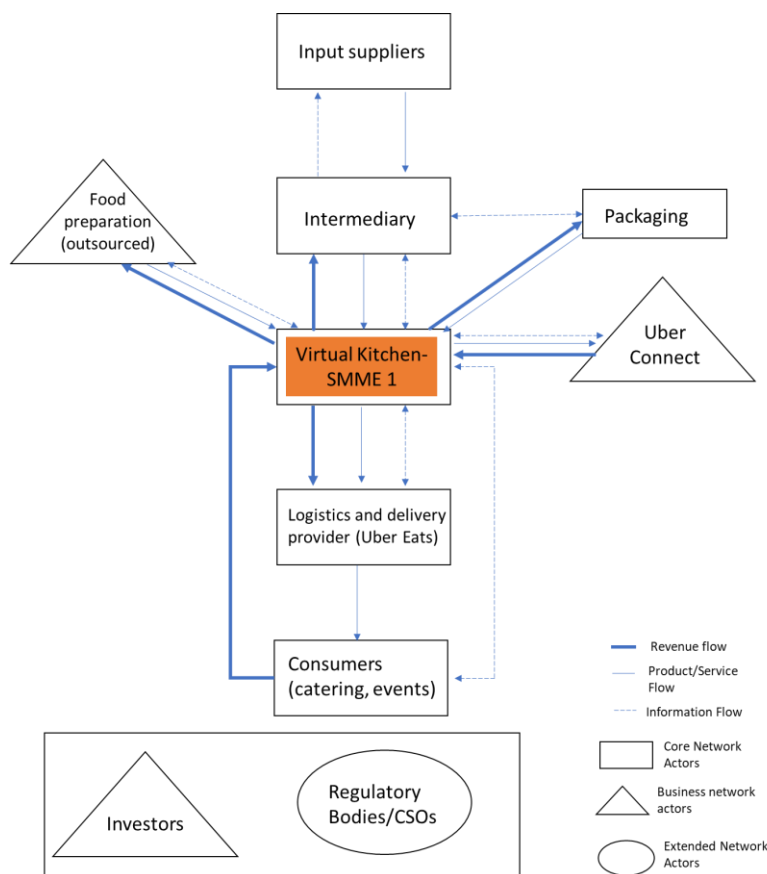
¹⁹ Barrientos, 2019. *Gender and work in global value chains: Capturing the gains?* Cambridge University Press.

²⁰ De Marchi, Di Maria, Krishnan & Ponte, 2019. Environmental upgrading in global value chains. In *Handbook on global value chains*. Edward Elgar Publishing

5.1.1 Stage 1: Value chain mapping for SMME 1

SMME 1 has five employees, including a director, a chef and three support staff in the virtual kitchen. The shipping containers are offered as turnkey solutions, as they arrive with a fully fitted kitchen and required equipment, tablets, a point of sale (POS) system and other hardware and software necessary to run it. This type of virtual kitchen is relatively low tech in nature and can be run without high technical capabilities. Such models therefore enable the employment of low-to-medium skilled staff. The benefit of using shipping containers is that they can be located close to key hubs of consumers, allowing for flexibility of location. SMME 1's virtual kitchen model primarily aggregates direct orders from customers, as well as receives orders through Uber Eats and Uber Connect.

Figure 2: SMME 1 value chain mapping



The virtual kitchen has applied for food safety standards such as Hazard Analysis Critical Control Points (HACCP) certification. This is captured under the circle of extended network actors. Although HACCP is not a compulsory food safety standard in South Africa, acquiring and monitoring the standard comes at a cost, and monitoring is required on a yearly basis to maintain the standard.

While the shipping container virtual kitchen is mobile and low cost, it tends to have limited cold store space and smaller-sized kitchens, limiting the breadth of items that can be put on the menu. Therefore, along with preparing some of the orders, SMME 1 orders food from other food manufacturers who pre-prepare certain menu items, package and sell it to SMME 1. This is then reheated, and value-added through some customization (e.g. adding some extra garnish or sauces) and sold to consumers.

Most of the relationships of SMME 1 are intermediated through a broker/middleman who connects them to key suppliers, and negotiate bulk deals on their behalf.

5.1.2 Stage 2: Measuring the architecture and stability of networks and assigning scores to SMME 1

DEMAND SIDE ANALYSIS: SMME 1 CONSUMING SERVICES/PRODUCTS						
NETWORK ARCHITECTURE		Current situation and challenges		Raw score (micro indicator)	Equal weighted score	Quartile: spectrum
SUB-PILLAR 1	Power, bargaining and competition			1/2	0.17	
Micro indicators	Symmetric power with respect and inputs	Costs include those for inputs and packaging. The relationship with main input suppliers is navigated through an intermediary/middleman. This intermediary negotiates for bulk deals and lower prices on behalf of SMME 1.		1		
	Symmetric power with respect to supplier services	Commission charges of the business network, including Uber Eats and Connect (platform provider), are high, with over 30% per order, which reduces overall profits.		0		
SUB-PILLAR 2	Intensity of interactions			1/3	0.11	
Micro indicators	Interactions with suppliers (co-operative vs. contested)	Interactions with input and packaging suppliers are cooperative, however much of the interaction is mediated through a known middleman. No rent extraction is perceived through middleman by SMME 1, as they are viewed as a one-stop-connection allowing for efficiencies.		1		
	Intermediaries	The value chain is not vertically integrated; it is intermediated by a middleman. High dependence on a single intermediary at this stage.		0		
	Supplier support	No direct interaction with main suppliers, thus no support provided.		0		
SUB-PILLAR 3	Network relationship quality			0/5	0	
Micro indicators	Ease/difficulty to negotiate with suppliers	The intermediation created a one-stop shop to connect with all suppliers, making negotiation less relevant. However, negotiations with distributors and platform providers (Uber) is more difficult, as there was no agency in deciding terms of the contract.		0		
	Financing	Extremely difficult to get lines of credit from commercial banks, with interest rates over 10% for SMMEs. Donor funding and development financial institution funding is difficult to access, and competitive. There are also very few accelerators running which are funded by venture capitalists or other investors, which also reduce the probability of gaining funding for firms like SMME 1, who have yet to scale or develop detailed business plans eligible for advanced financing,		0		
	Knowledge transfer	Relatively difficult to connect with universities; and very difficult to connect with government, primarily due to lack of clear information on who to approach and what services exist.		0		

	Managerial and technical capabilities	Relative difficulty in accessing educational institutions, the Sector Education and Training Authority, and TVET organizations more broadly. The lack of information on who to approach and where to ascertain specific managerial capabilities necessary to run the business is a constraint.	0	0.28	Relatively low (0.25-0.5)
	Hiring skilled professionals	Extremely difficult to find maintenance operators, data scientists, marketing managers and user-interface professionals, especially due to high costs and a small number of people who have the niche requisite capabilities.	0		
Network Architecture (overall)		Relatively poor/low network architecture, with low quality interactions with network actors, and lack of bargaining power to negotiate better credit or contract terms			
NETWORK STABILITY		Current situation and challenges	Raw score (micro indicator)	Equal weighted score	Quartile: spectrum
SUB-PILLAR 1	Lock-in and dispute settlement		0/2	0	Low (0-0.25)
Micro indicators	Ease of finding alternative suppliers	Uncertainty on finding alternative suppliers, as most deals occur through intermediaries/middle-men.	0		
	Negotiation and trust building	Difficult relationship with last mile delivery / distribution such as Uber due to high commissions charged, and low bargaining capability in comparison to larger firms.	0		
SUB-PILLAR 2	Access and reach		0/2	0	
Micro indicators	Support provision	During COVID-19, Uber did not provide any specific support on their platform. Relatively better relations with input suppliers through intermediary, as it helped negotiate for delays in payments.	0		
	Quality of enabling environment	Poor quality infrastructure, especially lack of payment systems, high costs of hiring own logistics and distribution, difficulties finding warehousing.	0		
Network Stability (overall)		Mixed relations with suppliers, mostly low levels of bargaining and flexibility		0.0	
SUPPLY SIDE ANALYSIS: SMME 1 SUPPLYING TO FINAL CONSUMERS					
NETWORK ARCHITECTURE		Current situation and challenges	Raw score (micro indicator)	Equal weighted score	Quartile: spectrum
SUB-PILLAR 1	Power, bargaining and Competition		3/4	0.25	
Micro indicators	Change in customer base and customer segments	Customer base has increased by over 40% since inception (a CAGR of 4.5% per year from 2013). Customer segments are primarily middle and middle-low income consumers.	1		

	Service delivery performance	Prior to 2018, SMME 1 delivered food through hiring locals drivers, however that created various issues in relation to 'who' was accountable for quality. This was an issue, for instance, if food arrived late or cold, or the order was incorrect. To mitigate issues related to accountability, a third party (Uber) has been used instead since 2019.	1		
	Main competitors	Main competitors are smaller local foods restaurants, rather than large incumbent chains. Many of these are informal and located close to consumers. However, there is still significant competition from these players, as many have started home-deliveries during COVID-19. The market is not saturated with large players, especially around ethnic food and SMME 1 has not faced any exclusion from large players in the same/similar line of business.	1		
	Market share	COVID-19 has reduced SMME 1's market share, since the number of competitors increased with many informal-home based entrepreneurs setting up food delivery services.	0		
SUB-PILLAR 2	Intensity of interactions		1/1		
Micro indicators	Changes in interactions with customers	Increase in interactions with customers, especially in terms of receiving feedback and trying to scale up operations. Transactions with customers in terms of orders have increased from 20 in the year of inception (2012) to approximately 1200 per year in 2019.	1	0.33	
SUB-PILLAR 3	Network relationship quality		1/2		
Micro indicators	Complaints	Relatively few complaints as many clients approach SMME 1 through referrals and networks, rather than social media advertising or because of SMME 1's online presence.	1	0.17	Relatively high (0.5-0.75)
	Trust with customers	Other than referrals, SMME 1 has faced significant difficulties in accessing new customers through social media campaigns and flyers.	0		
Network Architecture (overall)		Clients acquired through networks, and close relations are maintained to promote loyalty and trust in SMME 1		0.75	
NETWORK STABILITY	Current situation and challenges		Raw score (micro indicator)	Equal weighted score	Quartile: spectrum
SUB-PILLAR 1	Lock-in and dispute settlement		1/2	0.25	
Micro indicator	Dispute settlement procedures	SMME 1 has discount policy. If they receive complaints, customers are given 10% discount off their next purchase. Yet to have a defined refund management process given small customer base.	1		
	Customer support provisioning	No service support	0		
SUB-PILLAR 2	Access and reach		0/2	0	
Micro indicator	Access to new customers	Relatively open market with less competition, but low financing prevents expansion into new markets.	0		

	Quality of available infrastructure	Poor quality infrastructure, especially lack of payment systems, high costs of hiring own logistics and distribution, difficulties finding warehousing.	0		
Network Stability (overall)		Difficult to access new customers and limited infrastructure access preventing expansion		0.25	Low (0-0.25)

5.1.3 Stage 3: Value creation and value capture (cross network effects) for SMME 1

Value creation: the results suggest that despite having relatively low levels of network architecture and stability, some value creation has occurred for SMME 1 (albeit from a low base). For instance, most value creation has occurred through economic upgrading, i.e. there has been an increase in sales and profit margins as well as overall productivity (Table 5). However, product diversification is limited to home delivery, and the range of products sold has not substantially changed over the last 8 years; and there has been almost no new assets invested in to expand the business. Social upgrading was much more limited, for example, the number of employees has only grown by 2 over the last 8 years, and no new women employees have been hired. Furthermore, no staff are on permanent contracts, and most are precarious. Similarly, environmental downgrading has occurred, with an increase in the use of electricity and non-renewable fuel, as well as an increase in plastic and foil packaging which are not recyclable. However, no food waste is generated, which is a positive environmental outcome.

Table 5: Economic, Social and Environmental Value creation or lost

	Value Creation Indicators (per year)	Annual % change (2012 -2019)	Value creation (+) or lost (-)
Economic	Annual revenue/sales value	+35% (Range of revenue: R600,000-R1,500,000)	+
	Annual profit margins	+200% (until 2019), -80% (2020)	+
	Product diversification	Yes, home delivery (along with collection); limited menu change	+
	Productivity (Outputs/Inputs)	48%	+
	Investment in new assets	10% (e.g. Kitchen equipment)	+
Social	Current Employees	+40% (increase from 3 to 5 employees)	+
	Employees on permanent contracts	0	-
	Employees on part time contracts	+100%	-
	Women Employees	0 (only 1 as chef since inception)	-
	Electricity costs	+25% (2020: R30000)	-
Environmental	Fuel costs (non-renewable)	+35% (2020: R15000)	-
	Use of cold store	Yes	+
	Waste generation (as % of sales)	0%	+
	Packing material (share of total packaging)	Foil: + 40%; Plastic: +60%; Paper: -5%	-

Source: Compiled from interview and response to questionnaire with SMME 1

Value capture and cross-network effects are summarised in Table 6.

Table 6: Value capture for SMME 1

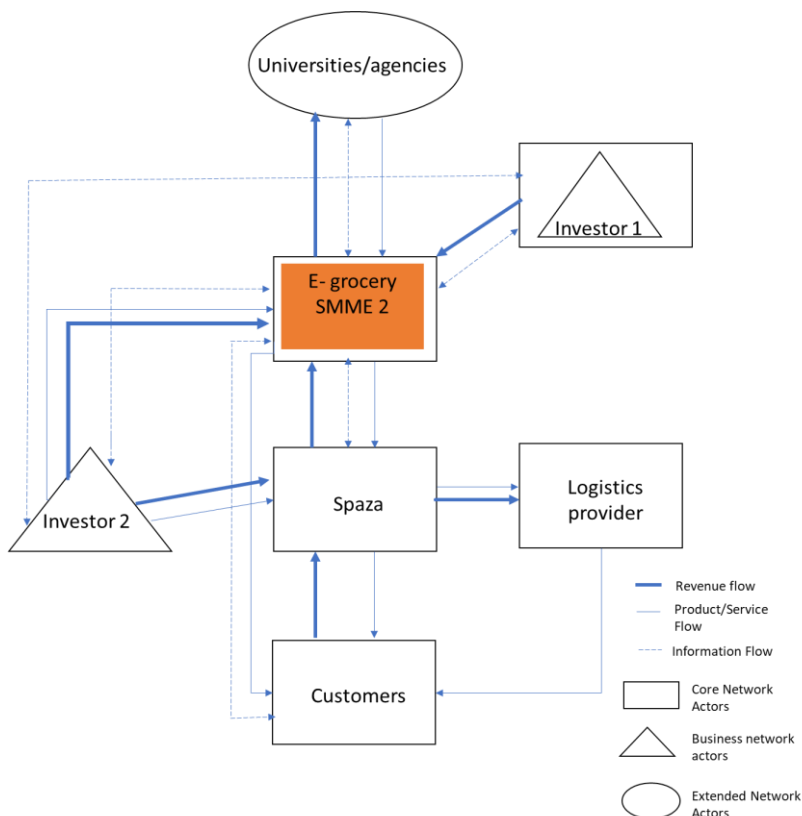
Demand side	Supply side
Economic upgrading: Convex curve expected - value creation starts off slowly, but with improvement in networks, it increases at a faster pace. Social and environmental upgrading: Mostly falling curves (concave downwards), suggesting possible downgrading with lowering social and environmental value over time.	Economic upgrading: Upward curve, with increase in network architecture, stability and economic upgrading. Social and environmental upgrading: Mostly falling curves (concave downwards), suggesting possible downgrading, with lowering social and environmental value over time.

5.2 Case study of SMME 2 (e-grocery)

SMME 2 is a platform which began in April 2020 to support local spaza shops in townships to stay afloat for business during the COVID-19 pandemic by enabling customers to make online orders. It was initially started to 'flatten the curve' during COVID by reducing customer time in spazas, and allowing them to still shop locally. SMME 2 set itself up as a 'local store connector' platform, through its website. From the supply side, its customers, which are spazas, register their stores in order to access the local market and allows customers to shop from their local stores by simply submitting their grocery list through their phones and collecting them after receiving confirmation. With 3 employees, the platform has over 1200 spazas, restaurants and other township-based businesses registered and is looking to expand its offering further.

5.2.1 Stage 1: Value chain mapping for SMME 2

Figure 3: SMME 2 Value chain mapping



As shown in Figure 3, SMME 2 offers spazas platform services, allowing them to register at no cost on their platform. Spazas can reach multiple customers in their local area. SMME 2 also provides a unique customer-to-business (C2B) offering by allowing customers to create customized 'grocery lists' which are then uploaded on the platform. SMME 2 then, in effect, provides a matchmaking service, linking the 'lists' of customers to offers and deals provided by the registered spazas. Once the matchmaking is complete, spazas offer click and collect options to customers, or hire logistic operators to deliver groceries. SMME 2 also provides a range of complementary services to spazas, from website development to search engine optimization tools, own domains, user forums and disk space for data collection on their cloud. Spazas can create their own webpages enhancing their technical capabilities.

SMME 2 has partnerships with two investors. Investor 1 is involved in the funding of the platform (both seed funding and acquiring new capital). It has a broader agenda around digitalisation and facilitating better access to financial services. Investor 1 also assists with marketing and education. Investor 2 is a global investment bank which provides grant funding for SMME and tech development. It also assists spazas to achieve greater levels of formalization.

5.2.2 Stage 2: Measuring the architecture and stability of networks and assigning scores to SMME 2²¹

SUPPLY SIDE ANALYSIS: SMME 1 SUPPLYING TO SPAZA SHOPS					
NETWORK ARCHITECTURE		Current situation and challenges	Raw score (micro indicator)	Equal weighted score	Quartile: spectrum
SUB-PILLAR 1	Power, bargaining and competition		2 /4		
Micro indicator	Change in customer base and customer segments	Limited to spaza shops in current township area of operation. However, looking to expand to include linking SMME food processors to spazas/customers, and looking to expand to new geographic regions and offer home delivery.	0	0.165	
	Service delivery performance	Presently, registering is free of charge for spazas. However, charges range from R150-1200/ month for other website development services. These costs are not enough to run the platform, and without suitable funding/ sustainable business models, the long-term prospects of SMME 2 remain weak. SMME 2 plans to expand into B2C in phase 2 of their expansion by offering home delivery. Since SMME 2 is serving township spazas, it can still grow their customer base. SMME 2 is currently in its pilot phase, and therefore works on a heavily subsidized model that facilitates increased adoption/participation. This may be unsustainable in the future, without a clear business strategy.	1		
	Main competitors	Competitors offering similar matchmaking services in township areas exist, however, they work across different region. There are also platforms that provide combined e-grocery and delivery services targeting middle- high income consumers that are not direct competitors to SMME 2.	1		
	Market share	Too soon to determine market share given that it is a very recent offering	0		
SUB-PILLAR 2	Intensity of interactions		0/1		
Micro indicator	Changes in interactions with customers	Interactions with spazas have been mixed. First, there was a lack of awareness of the benefits of digital trading and being omni-channel. Secondly, due to limited digital/technical capabilities, spaza owners are unable to use the online ordering system efficiently. The lack of trusted payment systems furthermore reduces trust in developing digital footprints. This can lead to difficult relationships with spazas.	0	0	
SUB-PILLAR 3	Network relationship quality		0/2		
Micro indicator	Complaints	Lack of trusted payment systems led to difficulty finding new customers (due to word of mouth) to use the app.	0		

²¹ The interviewee did not provide sufficient information to undertake a demand side analysis. Therefore, the assessment is only done from a supply side perspective and assigned score should be understood as such. A direct comparison of scores with SMME 1 is therefore not possible.

	Trust with customers	There is a lack of trust due to the novelty of digital systems in townships. Spaza owners are used to doing business informally as barter systems and fear being looted. Therefore, many join, but do not optimally use the services. Furthermore, many spaza owners/operators are illegal migrants, who also do not want to create formal digital footprints.	0	0	Low (0-0.25)
Network architecture (overall)		Significant opportunities to improve capabilities of workforce by creating specialised training; and developing accelerators for supporting business development and expanding beyond pilot stages		0.17	
NETWORK STABILITY	Current situation and challenges		Raw score (micro indicator)	Equal weighted score	Quartile: spectrum
SUB-PILLAR 1	Lock-in and dispute settlement		1/ 2		
Micro indicator	Dispute settlement procedures	SMME 2 does not have a defined refund management process or money back guarantees, as they currently do not charge any fees. There are no spaces where complaints can be discussed face-to-face in the current business model. However, future business models will incorporate clear protocols for resolution of issues.	1	0.25	
	Customer support provisioning	Limited customer support is provided, mostly in other services offered (e.g. website development)	0		
SUB-PILLAR 2	Access and reach		1/2		
Micro indicator	Access to new customers	With a growing database, there is increasing ability to access new customers. However, reaching via social media is difficult, and marketing through radio, and flyers has proven to be more successful to attract spazas.	1	0.25	
	Quality of available infrastructure	Similar to the issues faced by SMME 1	0		
Network Stability (overall)		Limited trust in relationships between SMME 2 and spazas due to lack of education and capabilities to effectually use apps and reluctance to formalise; there is the ability to grow consumer base, but need to demonstrate greater accountability and transparency		0.5	Relatively low (0.25-0.5)

5.2.3 Stage 3: Value creation and value capture (cross network effects) for SMME 2

Value Creation: the results suggest that despite having relatively low levels of network architecture and stability, some value creation has occurred. Most value creation has occurred through economic upgrading i.e. there has been an increase in revenue, product diversification and overall productivity (Table 7).

Table 7: Economic, Social and Environmental value creation or lost

	Value Creation Indicators (per year)	Annual % change (2012 -2019)	Value creation (+) or lost (-)
Economic	Annual revenue/sales value	+ 20% (increase primarily due to website services, not ecommerce)	+
	Annual profit margins	N/A (since the e-commerce service is not charged in the pilot phase)	N/A
	Product diversification	Yes, Spazas who have registered have bought other web services	+
	Productivity (Outputs/Inputs)	Increased sales of Spazas during the pandemic by +55%	+
	Investment in new assets	Technical and marketing managers	+
Social	Current employees	3, no change	N/A
	Employees on permanent contracts	N/A	N/A
	Employees on part time contracts	N/A	N/A
	Women employees	1	N/A

Source: Compiled from interview and response to questionnaire with SMME 2

Value capture: the results show that for economic upgrading, the network effects form a convex curve. In this case, the upgrading is a slow process due to limited trust and uptake of the app with spazas at firms. However, once SMME 2 is able to demonstrate its matchmaking value proportion, the pace of upgrading increases significantly.

5.3 Key takeaways from the RAF case studies SMME1 and SMME2

The RAFs for both SMME 1 and 2 suggest significant scope to expand foodtech in markets that have been otherwise neglected (low-income areas, poorer households, informal spazas). This has facilitated the creation of new forms of value creation economic upgrading, especially in relation to productivity, profits and product diversification.

However, networks with suppliers (for SMME 1) and consumers (SMME 2) remain unstable with a lack of trust in relationships. There remain unclear protocols on who is accountable, along with having low bargaining power with large input and service suppliers, causing unbalanced power structures. This is coupled with poor co-ordination with other businesses and extended actors (e.g. finance providers, government), which prevent the proliferation of these foodtech SMMEs.

Intra-firm factors, such as lack of STEM and managerial capabilities, and missing horizontal services (e.g. payment systems) are holding both SMME 1 and 2 back, inhibiting their ability to compete, grow and develop comparative advantages in the space.

6. Boosting horizontal services: Blockchain payment systems and network stability

Both SMME 1 and 2 faced difficulties because they depend on third parties for payment services (e.g. Uber Connect, Uber Eats). Payment services, as highlighted in Section 2, form part of the horizontal segment. Although not exclusive to foodtech, they are essential for the effective functioning of the vertical foodtech segments. SMME 3 interviewed is a blockchain-based payment and investment platform/exchange which can play in facilitating the inclusion of retail SMMEs.²² This platform, which has been in operation for 11 years and with ten permanent employees, uses Amazon Web Services to run its offering.²³ Customers are not charged transaction or administration fees, but are charged USD10 for advertising fees. The platform offers competing services to

²² A more detailed case study on this player is available in Krishnan and das Nair, 2021 (forthcoming)

²³ It operates both a closed loop banking payment system and a synthetic Central bank digital currency (CBDC), which is a fiat backed token coin, issued by an exchange, backed by a reserve/central bank.

Visa and Mastercard. The onset of the COVID-19 pandemic has made it even more important to have cashless payments and improved financial access, particularly for the unbanked, who may be served by SMMEs.

Such platforms face several challenges which limit their ability to enter and expand in South Africa. The first challenge is in building trust with customer bases. Due to the online nature of financial transactions, there is a relatively low level of trust when it comes to blockchain usage, especially for retail SMMEs. Many retail SMMEs have little or no experience using payment systems or cryptocurrency in e-commerce transactions through blockchain, and many informal retailers do not even use online banking systems. Furthermore, customers of retail SMMEs frequently demand on-arrival payment, rather than paying online, reducing the probability of using blockchain based payment systems. The negotiation process therefore to get new customers on board is difficult, with long time commitments required to build relationships.

Another challenge faced is regulatory. Such platforms require a banking licence to operate. Commercial banking licences are extremely difficult to obtain, with start-up requirements of ZAR250 million. It is possible however, as this platform has done, to apply for a mutual bank licence which has lower capital requirements. Presently this platform works with central banks in other countries given the challenges it has faced in getting the South African commercial banks on board. According to the interviewee, the commercial banks are not open to collaboration on an open and free platform. The collective dominant positions of the incumbent commercial banks create barriers to entry for new business models.

There are significant risks involved which necessitates a degree of prudential regulation. With concerns of sophisticated fraudulent and money laundering activities,²⁴ data and cyber security risks, regulatory arbitrage, circumvention of exchange control, illegitimate cross-border financial flows, terrorist financing, tax evasion and impermissible tax avoidance,²⁵ regulation is essential to protect consumers and the integrity of the banking system. Nonetheless, to assist with lowering barriers to entry for new business models, whilst ensuring that the necessary regulatory framework is in place to mitigate the risks, the Intergovernmental Fintech Working Group (IFWG) was set up in 2016. The IFWG is a body of several South African financial sector regulators - National Treasury, the Financial Intelligence Centre, the Financial Sector Conduct Authority, the National Credit Regulator, the South African Reserve Bank and the South African Revenue Service. The IFWG's Innovation Hub aims to respond to market changes due to fintech and to promote safe experimentation (e.g. through regulatory sandboxes) and responsible innovation in the sector.²⁶

Using blockchain payment systems have two-way benefits for foodtech SMMEs – first, it allows them to have greater control over their value chain and their customers (thereby enhancing supply side network stability); and second, it can reduce transaction costs (increasing overall economic value creation opportunities). However, lack of technical and managerial capabilities in SMMEs limits the uptake and effective use of blockchain technology, impinging on trust.

7. Policy actions

We set out some policy priorities and actions from our assessment above.

Main issues derived from RAF	Policy priorities (key actions)
1. Network relationship building (between large players and SMMEs) - accountability,	Create a government/ quasi-governmental taskforce (coordinated strategy) to deal with SMME issues in relation to network building, start-ups, market entry, and expansion in foodtech. This taskforce can draw on experience from large private firms and civil society through public-private partnerships, and can link up with the ongoing development of the Agriculture and Agro-processing Masterplan.

²⁴ [https://techcentral.co.za/south-africas-mti-was-worlds-biggest-crypto-scam-in-2020/105021/#:~:text=6%2Dbillion\)%20worth%20of%20bitcoin,says%20the%20blockchain%20analysis%20company.](https://techcentral.co.za/south-africas-mti-was-worlds-biggest-crypto-scam-in-2020/105021/#:~:text=6%2Dbillion)%20worth%20of%20bitcoin,says%20the%20blockchain%20analysis%20company.)

²⁵ <https://www.schindlers.co.za/2020/a-guide-to-the-intergovernmental-fintech-working-group-positionpaper-on-crypto-asse/>

²⁶ https://www.ifwg.co.za/wp-content/uploads/Press_Release_Innovation_Hub_Launch.pdf

flexibility and shock support	Contracts between SMMEs and network actors should include clauses related to support during shocks. Furthermore, the government can support foodtech SMMEs through creating a 'shock support fund' wherein all parties put in small amount of funds over time, so as to create a buffer during times of shock.
2. Trust building and transparency in using digital tools	Creating more transparent chains with published lists or databases of suppliers in food systems so that these are publicly available. Lack of cohesive and direct relationships prevents forming strong networks, which in turn reduces additional training, information and technical support that could be transferred within the network. Creating 'open and shared systems' can enhance cooperation and trust building.
3. Tax breaks, subsidies, lines of credit for SMMEs (to incentivise risk taking or green investments)	Providing various tax breaks to smaller logistic firms and food processors, or subsidies for investing in renewable fuel, electric cars, electric bikes etc.
4. Setting up accelerators and PPPs	Strengthen accelerators and sandboxes to allow more SMMEs to participate, and to provide a space to experiment. Partnerships with business and extended networks to work out preferential agreements on interest rates, loans, credit lines and grants should be developed.
5. Improve traceability infrastructure for market access and support of SMMEs	Develop digital systems suited for SMMEs value chain players to enable traceability of certification, adherence to standards, labour and environmental practices (e.g. GS1), linking with the ongoing development of the Agriculture and Agroprocessing Masterplan.
6. Technical and managerial capabilities building (STEM investment) and enabling environment support	Policy actions can reduce the digital inequalities in relation to differences in skills, education, access rights and costs, wealth and income, and location.²⁷ The lack of available and affordable skilled workforce (e.g. marketing managers and social media analysts) inhibits expansion of SMMEs. Creating specialized STEM education, as part of vacation and general education skills at school level, or even as short term diploma programmes for professionals. Utilising the Food and Bev Sector Education Training Authority (SETA); Wholesale and Retail SETA, and the CSIR more effectively to develop Foodtech. Furthermore, upskilling and enhancing technical capabilities will allow SMMEs to use advanced order management and aggregation systems, and real time tracking systems to enhance their productivity. Appropriate support is needed to create an enabling ecosystem of support for these SMMEs. For instance, collective sourcing, logistics and warehousing can reduce costs. However, the appropriate competition exemptions, if applicable, need to be granted. This needs to be embedded in the ongoing development of the Agriculture and Agroprocessing Masterplan.
7. Competition regulation in the digital economy ²⁸	Network effects mean that a few large players can grow into dominant platforms, and there are concerns about the abuse of these dominant positions. At present, there is no neutral or open space for negotiation of terms of contracts, especially with large platforms. With regards to possible abuse of dominance from input sellers and final

²⁷ Vilakazi, 2020. Policy proposals for South Africa on the digital economy. CCRED POLICY BRIEF 5, May 2020

²⁸ See also Roberts and Vilakazi, 2020

	product buyers, the Competition Commission's Price Discrimination and Buyer Power provisions have the objective to protect SMMEs in agro-processing, retail and online services, and these need to be enforced. The Commission's market inquiry terms of reference into online intermediation platform services²⁹ explicitly recognises platforms in food markets. The inquiry should invite evidence from foodtech firms to better understand challenges they face in the inquiry. Further, payment systems regulations, while ensuring prudential outcomes, should not create insurmountable barriers to entry for fintech firms.
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²⁹ <http://www.compcom.co.za/wp-content/uploads/2021/02/OIPMI-Draft-ToR-19-02-2021.pdf>