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Urban food security at the intersection of retail supply chain management and development studies

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Key words: food security, urban, retail supply chain management, development studies

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PREFACE

Pursuing a career in research and academia was not one of the options I saw for myself as a degree student in business school. It was only after a stint in private sector and a master's degree in London that it occurred to me that research is in fact a viable career option. Sometimes I do wonder whether I am too cool to associate myself with the nerds that academia is full of, but then I remember I too am a massive nerd and making a career out of glorified Google searches is pretty much my dream. Now that I have insulted my colleagues, there is an Excel spreadsheet full of people that have contributed to this thesis as well as my identity as a researcher and major nerd.

First, I would like to thank my thesis supervisor Professor David Grant. Despite our generational differences, it has been a pleasure working with you and the fact that I have you in my corner gives me confidence and courage. I also extend a huge thank you to my degree supervisor Professor Gyöngyi Kovács, who encouraged me to apply to Hanken's doctoral programme despite there being only three weeks to the deadline. Your support has been invaluable, particularly in the more challenging times of late.

A special thank you goes out to Professor Brian Gibson and Russell Harpring for acting as my opponents during my manuscript seminar. The comments I received from you were extremely helpful in shaping the thesis into pre-examination shape. My pre-examiners, Dr Jane Battersby and Professor Martin Hingley, your feedback was the defining factor in what the thesis ended up becoming. A special thank you to Professor Hingley for agreeing to act as my opponent in the thesis defence.

What has been a deciding factor in this thesis reaching completion in these challenging times was access to the office during the pandemic. While emptier than usual, seeing Anna Aminoff, Diego Vega, Amin Maghsoudi, Nezih Altay, and Wojciech Piotrowicz regularly at the office offered a sense of community and normalcy that has contributed

to my mental well-being tremendously. I want to thank you all for the support and contributions to my research throughout the process, as well as the beers and meals shared socially. Special thanks also go to Nikodemus Solitander, Karen Spens, Johanna Frösén, Janne Tienari, and Jaakko Aspara for their roles in my thesis journey.

A shared joy is the greatest joy, but there is also something to be said about shared suffering. The kinship and unity that I have experienced with my doctoral and other colleagues has been amazing. I would like to give a special shout out to Hannu and Caroline, who were there to guide me when I was completely lost during my first weeks at Hanken, as was Sonja, my first office mate. Bella, these last couple of milestones were made somewhat easier as I was able to share them with you. Linda, Eija, Minchul, Greta, Wonde, Félicia, Kristjana, Qifeng, Robert, Anna, Eva, Tiina, Natalia, Stefan, Fares, Maria, Kira, Sanchi, Marie-Lou, Kristoffer, Jori, Steven, Heidi, you are all absolute legends.
This research would have been impossible without the financial support of several foundations. The Hanken Support Foundation, Wallenberg Foundation, The Foundation for Economic Education, Hang Bang Stiftelsen, and Alfred Kordelin Foundation all contributed generously to my research.

The field work completed in this thesis was made possible by the cooperation of Professor Jan Havenga from Stellenbosch University and Professor Ruth Banomyong from Thammasat in Bangkok, who also co-authored a paper with me. Your hospitality and assistance in my field work was invaluable and I wish you could join us for the defence (thanks Covid). So many others contributed to my field work in both locations. In South Africa the people at the amazing NGO I collaborated with deserve a ridiculously big thank you. In Thailand my guides and collaborators in the neighbourhoods, and those who put me in touch with them, thank you so much! In both places I was lucky enough to work with amazing individuals who transcribed and translated the interviews, I seriously don't know what I would have done without you. Lastly, the biggest thank you to everyone who took the time to be interviewed by me. Even though it did occasionally lead

to face palms from you, this says more about my academic credibility than it does about anything else.

Finally, I want to thank my long-suffering family and friends. My parents, who have supported me in so many ways it is impossible to even fathom. My sister, who always made sure to take advantage of my field work locations and come visit. The whole extended Tuomala and Lumme crews, thanks for the summer house respites and crayfish parties. Those kept me sane(ish). I am insanely lucky to have a support system of friends from all over the world and throughout the different phases of my life. That column in the Excel spreadsheet is humblingly long. Now that this chapter of my life can be closed, it's on to the next crisis! Stay tuned!

This thesis is dedicated to my grandparents, with a special mention to Vaari, who would have been 90 today. Cheers!

Töölö, 24.8.2021

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LIST OF ABBREVIATIONS

BMA	Bangkok Metropolitan Authority
BoP	Base of the Pyramid
CSR	Corporate social responsibility
FAO	Food and Agriculture Organisation
FDI	Foreign direct investemnt
GLR	Global large retailer
HCSM	Humanitarian supply chain management
IFS	Informal food sector
SLR	Systematic literature review
MDG	Millennium Development Goals
MPI	Multidimensional Poverty Index
NGO	Non-governmental organisation
PE	Political ecology
SCM	Supply chain management
SDG	Sustainable Development Goals
SSCM	Sustainable supply chain management
TBM	Triple burden of malnourishment
UN	United Nations
UPE	Urban political ecology

1 INTRODUCTION

1.1 Background

Urban food security has emerged as a pressing development policy issue in the 21st century (Maxwell, 1999; Crush and Frayne, 2011b; Battersby and Haysom, 2018). What has previously been considered a rural issue deriving from agricultural and production deficiencies now revolves increasingly around spatial and financial access, as well as retail supply chain management. Currently half the global population resides in urban areas, with the number projected to rise to 66% by 2050 (United Nations, 2018a). Urban issues are therefore more relevant than ever.

Urban poverty is a central factor in urban food security. As urbanization increases, informality and marginalization in cities becomes more widespread as cities struggle to maintain sufficient infrastructure (Frayne and McCordic, 2015). Informal neighbourhoods tend to suffer from food insecurity more, due to spatial and financial constraints as well as societal structures such as segregation and gentrification (Battersby and Crush, 2014; Wertheim-Heck and Raneri, 2019). However, many poor urban neighbourhoods have thriving informal food sectors, that in fact serve the dynamics of these areas much better than formal retail chains could.

This thesis examines urban food security in poor urban neighbourhoods in two Global South contexts. In many countries in the Global South, a food retail modernisation has been taking place over the last several decades, where traditional forms of retail such as independent small shops and wet markets are replaced by global large retailers (GLR) (Reardon and Hopkins, 2006; Wertheim-Heck *et al.* , 2019). The urban poor represents a lucrative new market for GLRs, as they are a large demographic in the Global South, however capitalising on this market is prioritised over the specific dynamics of what might improve the food security of these neighbourhoods.

The urban environment is produced through socio-environmental flows, and those flows also contribute to food security. Urban political ecology (UPE) is able to analyse those flows as well as the power relations which dictate who in a given city is food insecure and who is not (Heynen, 2006). Through these flows it is possible to determine the material conditions and underlying factors contributing to urban food security issues.

This thesis approaches urban food security from an interdisciplinary perspective. Most previous research in the subject has been conducted within the field of development studies, with a focus on policies and societal factors. Because the urban population is almost exclusively dependent on the market for their nourishment, the food supply chain, particularly retail and distribution, play an important role in urban food security. The research gap between the two streams of research and how they can complement each other is where this thesis is situated, as shown in Figure 1. UPE is the theoretical framework that encompasses both streams, as well as the thesis. In summary, with this interdisciplinary approach, the gap between food retail and distribution practices and particular needs of the urban poor can be taken into consideration to contribute to both theory and practice for retail and development policies.

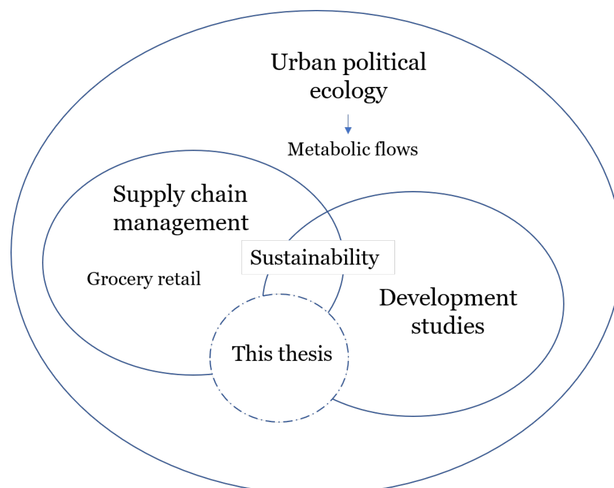

Figure 1 **Thesis position**

The exploratory empirical studies for this thesis were conducted in the Western Cape, South Africa and Bangkok, Thailand. Both contexts have high levels of urban inequality and informality, which makes them relevant and interesting contexts for this study. However, they have very different societal backgrounds in terms of demographics and the significance of food in culture and society. The dynamics in both locations differ significantly, but also provide insight to what types of mechanisms are used in different contexts and contribute to potential solutions.

The research questions for this thesis are as follows:

RQ1: How can food retail supply chains take specific dynamics of urban poor neighbourhoods into consideration in order to avoid a 'one-size-fits-all' mentality while operating in urban areas?

RQ2: What is the role and relevance of micro-retailers and the informal food sector for food retail, especially in a developing country context?

RQ3: How can food retail supply chains become more socially sustainable and inclusive to diverse context, such as urban poor neighbourhoods?

These research questions arise from themes in the literature. Spatial and financial access to food is a central theme, relating to RQs 1 and 2, and aims to shift the food security discourse from a production oriented perspective to highlight distribution and retail, particularly in an urban context (Maxwell, 1999; Battersby and Crush, 2014). The RQs also pertain to underlying societal factors, examples of which are residential segregation and gentrification efforts marginalising urban poor neighbourhoods and businesses, exacerbating urban inequalities (McLennan *et al.* , 2016; Wertheim-Heck *et al.* , 2019). Micro retailers and the informal food sector (IFS) are significant themes to address when considering food access for the urban poor, particularly in a Global South context, as they can respond to the dynamics of poor or

informal neighbourhoods better than formal retail (Kelly *et al.* , 2014; Nandonde and Kuada, 2016). Finally, the Global South is experiencing a retail and nutritional modernisation wave, where traditional ingredients and forms of retail are being challenged by imported products and GLRs, leading to for example public health implications, that were previously negligible in these contexts (Battersby and McLachlan, 2013; Gómez and Ricketts, 2013; Wertheim-Heck *et al.* , 2019).

1.2 Key concepts

This section briefly introduces the central concepts in the thesis, which will be more thoroughly explored in chapter 2.

Food security is the central concept, which "*exists when all people at all times have physical and economic access to sufficient safe and nutritious food*" (FAO, 2009). This thesis approaches the subject through *sustainable supply chain management* (SSCM), which goes beyond the economic aspirations of business to include pressures from society and the environment in its core functions (Touboulic and Walker, 2015). *Urban political ecology* is the theoretical framework applied in this research, as it is capable of analysing socio-environmental flows that make up the urban environment and contribute to inequalities and marginalisation (Agyeman and McEntee, 2014). The urban poor generally suffer from *spatial and financial constraints* when it comes to food security, referring to difficulties in accessing food outlets or food being too expensive for them to buy (Battersby and Crush, 2014). In urban areas in the *Global South*, a term used for areas outside of Europe, the US, Australia and New Zealand (the *Global North*), *informality* is a relevant part of the urban fabric and defines the lives of millions of urban poor (Dados and Connell, 2012). Particularly the *informal food sector* (IFS), consisting primarily of *micro retailers* such as market stalls at traditional and wet markets, street food vendors and independent tuck shops, are significant sources of nutrition (FAO, 2007). On the other end of the outlet spectrum are *global large retailers* (GLR), who are increasingly penetrating the Global South markets (Nandonde and Kuada, 2016).

1.3 Outline of the thesis

The summary section or Kappa of this thesis consists of six chapters. Following the introductory chapter is a literature review of existing research in urban food security, sustainable supply chain management (SSCM) and urban political ecology (UPE). The third chapter consists of the research paradigm and the methodology chosen for this thesis.

This is a composite thesis, consisting of the summary section and three essays, summarised in Figure 2 and synthesised in chapter 4. The first essay is a structured literature review (LSR), published as a book chapter (Tuomala, 2020), and provides a springboard for the empirical studies in essays 2 & 3. Essay 2 is under third review at *International Journal of Logistics Management* and consists of the empirical material collected in South Africa. The study for essay 3 was done in Bangkok and the essay is currently being prepared for journal submission to British Food Journal.

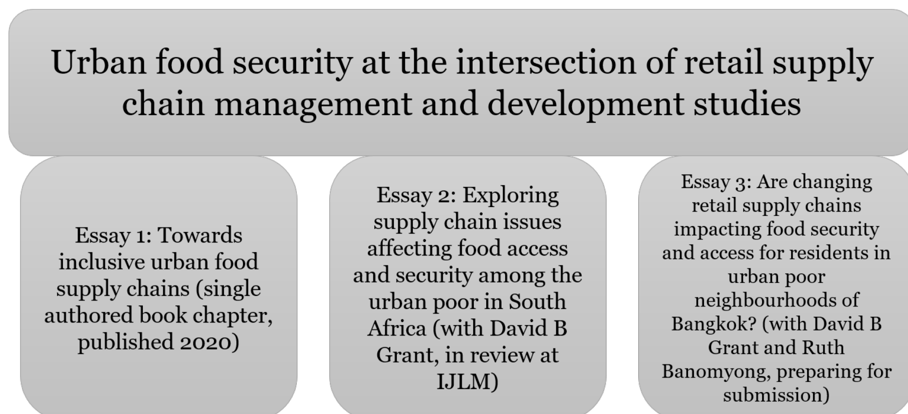

Figure 2 Structure of the thesis

Chapter 5 synthesises and discusses the findings of the empirical studies and the three essays in relation to the research questions and extant literature. Finally, chapter 6 concludes the thesis with theoretical and practical contributions as well as suggestions for future research.

2 URBAN FOOD SECURITY AND SUPPLY CHAIN MANAGEMENT

2.1 Relation to essays

The first essay in this thesis is a literature review published in an edited book (eds. Aktas and Bourlakis, 2020). This chapter synthesises the literature presented in all three essays as well as introducing additional pertinent and recent literature. Essay 1 introduces the subject of urban food security in a more general manner, whereas the literature sections in the empirical essays are more context focused.

2.2 The urban context and food security

2.2.1 Urban versus rural

According to the United Nations (2015), over half the global population resides in urban areas and the number is estimated to reach 66% by 2050. Despite this, in an exhaustive overview of food security agendas, both internationally and specifically in Africa, Crush and Frayne (2011b) found very little reference to the urban context and the specific dynamics of urban dwellers. Chatterjee *et al.* (2012) also specify that the urban poor are neglected when discussing India's hunger problem. Maxwell (1999) paints urban food insecurity as the biggest developmental challenge of the 21st century, but laments the "invisible" nature of the issue. The reasons for the limited interest in urban food security stems from the widespread notion that urban citizens are wealthier than their rural counterparts and live among a plentiful and diverse selection of different food outlets and products (Crush and Frayne, 2011b).

The notion of food security was once a narrow perspective on national and global food availability, specifically focusing on production and agricultural factors (Coates, 2013). This approach assumes that once rural food production functions sufficiently, the available food will reach consumers (Blekking *et al.* , 2020). Urban food security is thus

reduced to an extension of rural policies, rather than viewed as a factor of the overall food system (Maxwell, 1999). Shifting the research and policy focus from a production-oriented point of view to increased attention on consumption and access has occurred over the last two decades (Tacoli, 2019). However, the urban perspective has still been missing from food research, even though over half the global population now resides in cities (Battersby and Watson, 2018).

This applies especially to the Global South context and development policies, which are influenced by the UN Sustainable Development Goals (SDGs). Battersby and Haysom (2018) suggest that urban food security discourse is stagnating on three foci. First, the production-oriented mindset is present in urban areas too, where projects surrounding urban agriculture are hailed as sustainable solutions. Second, interventions regarding the urban poor usually focus on household or individuals and are approached from an income generation perspective. Third, both these types of interventions or proposed solutions do not address the structural inequalities and system failings of the current urban food system (Battersby and Haysom, 2018). The inclusion of UPE and SSCM into the discourse will explore these structural factors and the different stakeholders involved in urban food access and security.

Urban food security can be placed under the umbrella of global development. The SDGs, along with their predecessors the Millennium Development Goals (MDGs) have been an important factor in the shaping of an international development consensus. The SDGs were formulated partly based on critiques of the MDGs, e.g. the missing urban component in the development agenda (Parnell, 2016). The SDGs contain an explicitly urban goal, Goal 11 (henceforth SDG11), striving for 'inclusive, safe, resilient, and sustainable' cities (United Nations, 2016), but have also been critiqued due to a rather varied understanding of how the urban context affects different developmental issues and vice versa (Barnett and Parnell, 2016). The road to achieving SDG11 is heavily based on numeric data and indicators, which runs the risk of sidestepping many urban issues that affect people's lives daily,

but are not necessarily quantifiable (Caprotti *et al.* , 2017). Quantitative data can be useful for e.g. establishing inter-city collaboration for common urban problems or analysing impact of certain types of policies in cities of similar stature (Rozhenkova *et al.* , 2019). However, the complexity of many urban issues requires active collaboration both academically between social and natural scientists as well as between practitioners, researchers and private and public sectors (Patel *et al.* , 2017). Furthermore, SDG11 does not address food in any way. Hence urban food insecurity requires an inter-goal approach.

The SDGs provide a useful platform for interdisciplinary action and research, as the goals cover a comprehensive array of development themes. Urban food security for example can be approached through the lens of two main goals, SDG11 and SDG2, the zero hunger goal. SDG2 is comprehensive in the sense that it covers agricultural production ensuring food availability, as well as consumption patterns and malnutrition statistics (Otekunrin *et al.* , 2019). Hunger is however not the only factor in food security, nor is sufficient availability of food on e.g. a national level. SDG2 approaches production and consumption somewhat disconnected from each other, disregarding the complex processes that take place between the two phases (Veldhuizen *et al.* , 2020). Urbanization for example has changed food consumption drastically in the last few decades in many Global South contexts, with changes in food expenditure and diet patterns (Reardon, 2015). This is not, nor are other urban issues, addressed in SDG2, further strengthening the need for an inter-goal approach. The factors that underlie consumption are diverse and context dependant, ranging from international trade agreements to location of grocery retail outlets in a neighbourhood and the potential access constraints of individuals (Veldhuizen *et al.* , 2020). The next section explores some of these factors from an urban food security perspective.

2.2.2 *Availability, access, and utilisation*

The Food and Agriculture Organization (FAO) (2009) of the UN defines food security as:

> "Food security exists, when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life."

In addition to the definition, food security can also be divided into four dimensions across both development studies and SCM, as depicted in Figure 3. Development studies is concerned with people getting sufficient nutrition and having adequate sanitation. On the other hand, SCM is a business process to ensure better on-shelf-availability and prevent stock-outs in retail, leading to availability and access and choice for consumers. This process includes issues of where stores are located, the number of stores and the products offered in-store (Fernie and Grant, 2008). This thesis explores the intersection of these streams of research from the consumer's perspective.

	Development studies	SCM
Availability	• Adequacy of supply • Food production	• On-shelf availability • Out of stock
Access	• Financial indicators • Prevalence of undernourishment	• Store location • Distribution centres
Stability	• Political situation • Imports versus exports	• Food flows • Sourcing
Utilisation	• Prevalence of malnutrition • Sanitation, clean water	• Food safety • Traceability

Figure 3 Dimensions of food security (adapted from FAO, 2020)

In this thesis the focus is on availability, access, and utilization. Stability refers to e.g. climatic and political shocks and disturbances in food supply chains in terms of sourcing and production further upstream in the food supply chain (FAO, 2020). This study focuses on everyday food security in poor urban contexts, where the other three dimensions are emphasized. While there are clear stability issues related to availability and access, such as stability of supply and the continuous flow of food into the neighbourhood, due to their location outside the retail end of the food supply chain these are outside of the scope for this study.

When discussions of food security first emerged, the main concern was for nation states to produce enough food to domestically provide for their citizens (Coates, 2013). The access dimension was more widely adopted when Sen (1981) published his essay on poverty and famines, where he introduced the idea that insufficient entitlements of households and/or individuals impacts their ability to acquire food more than a fundamental lack of it. The focus shifted from physical availability to energy requirements, where caloric intake was considered the baseline of whether households or individuals were food secure (Maxwell *et al.* , 2014). Other nutritional considerations and food quality were not a part of the food security discourse, as diet was linked to the health sector with food security more focused on agriculture (Coates, 2013). In food SCM, availability of food is connected to retail availability, i.e. on-shelf availability and prevalence of grocery stores (Trautrims *et al.* , 2009). This shifts the power in the food supply chain to the retailer, as they control distribution of food both to the outlets as well as consumers (Hingley *et al.* , 2015).

Food access discussion has been focused on income and financial access from a development policy perspective (FAO, 2020), but the urban poor's access constraints are spatial as well as financial (Battersby and Crush, 2014). The modern grocery retail arrangement revolves around large chain hyper- and supermarkets that are mainly reachable by private vehicle (Fernie and Grant, 2008). As a result, smaller independent specialty shops and supermarkets located in town centres and other easily reachable places have been forced

to shut (Wang *et al.* , 2018). Marginalised communities such as the urban poor generally depend on public transport, so the larger outlets tend to be unreachable for many. In Global South contexts the modernisation of the retail landscape is still undergoing, with a more diverse retail landscape ranging from informal micro retailers to hypermarkets (Battersby and Crush, 2014; Nandonde and Kuada, 2016). Spatial and financial inequalities and thereby access constraints are more pronounced are connected to structural failings of the modern, profit oriented food system (Battersby and Haysom, 2018).

Utilization in this study refers to the quality of food consumed, and the different choices consumers make. While caloric sufficiency is one way of approaching food security, it must be acknowledged that calories are not equal in terms of their nutritional value. There is a rising interest in the 'triple burden of malnutrition' (TBM), which consists of under-nutrition, macronutrient deficiency, and over-nourishment or obesity (Gómez *et al.* , 2013). In urban contexts, especially in the Global South, a nutritional transition has been taking place over the past few decades, with increased access to processed, calorie dense foods over traditional fresh produce (Kelly *et al.* , 2014). This has shifted the food security discourse from solely focusing on hunger and the quantity of food to a more nuanced approach of food quality and its nutritional values as levels of obesity and other diet-related non-communicable diseases rise. Food quality also encompasses food safety and traceability in case of food-borne disease outbreaks or faulty products (Beske *et al.* , 2014).

There is a disconnect between the foci of the policy-oriented development approach and the SCM perspective. Whereas the former's focus is on national and regional indicators that can be misleading and marginalising in diverse contexts (Caprotti *et al.* , 2017), the SCM perspective continues to prioritise profits through modernisation and centralisation (Wang *et al.* , 2018). This disconnect is related to the 'hidden middle' of the SDGs, which ignores the complex supply chains and social processes that take place between production and consumption (Reardon, 2015; Veldhuizen *et al.* , 2020). SSCM attempts to bring a

more holistic perspective into food supply chain and policy research and discourse, where societal and environmental elements are at least as important as the economic. The next section explores SSCM more thoroughly.

2.3 Social issues and supply chain management

2.2.1 Overview of SSCM

SSCM has become a central concept in SCM research in the past decades. As supply chains are spread across the globe, their environmental, social and economic effects reach wider and increase the responsibility of focal companies in terms of consequences on local communities (Seuring and Müller, 2008). SSCM strives to expand the concept of a business beyond profit-seeking to include responses to external stakeholder pressures in terms of societal factors (Touboulic and Walker, 2015). Research on SSCM began through investigations into standalone sustainability issues along specific supply chains, with little focus on the interrelationships of the three elements (Carter and Rogers, 2008). The overwhelming majority of early SSCM research was oriented towards environmental sustainability, to a degree where the terms SSCM and Green SCM were used interchangeably (Ahi and Searcy, 2013). Research in the field has however started to adopt a more holistic perspective, where the social, environmental, and economic elements are all considered as part of the stream, rather than exclusively focusing on environmental aspects. However, social issues still remain in the minority of SSCM literature, resulting from the difficulties in measuring social performance in the supply chain (Klassen and Vereecke, 2012; Yawar and Seuring, 2017).

Social issues in the supply chain can include a variety of different factors, many of which are quite ambiguous and difficult to quantify. In supply chain contexts, Klassen and Vereecke (2012, p. 103) define social issues as ‘product or process aspects that affect human safety and welfare, community development, and protection from harm’. Yawar and Seuring (2017) further specify that any unethical action by

companies in a given community has recently been increasingly scrutinized by different stakeholders such as the media, NGOs or civil society actors. Some social issues that have been analysed in literature include labour conditions, human rights, marginalised people inclusion and gender (Yawar and Seuring, 2017). For for-profit companies, attending to corporate social responsibility (CSR) aspects in their function can be a way of minimising risks in terms of reputation or legal consequences (Klassen and Vereecke, 2012).

SCM and operations management (OM) have a unique set of tools at their disposal in terms of e.g. allocating scarce resources, which have mostly been utilised in the for-profit contexts (Van Wassenhove, 2019). These tools include transportation management, warehousing, logistics network design, inventory management and supply/demand planning, as well as linking business functions within and across companies, managing operations and coordinating processes (Grant, 2017). A prime example of utilising SCM and OM knowledge outside of the commercial sector is humanitarian SCM (HSCM). HSCM deals in both continuous aid, which could include regional development or famine aid, as well as relief aid after a sudden onset disaster, such as an earthquake or tsunami (Kovács and Spens, 2007). What particularly sets HSCM apart from traditional SCM is the aim of the supply chain itself; commercial supply chains pursue efficiency and effectiveness in order to maximise financial profits, whereas humanitarian supply chains operate to minimize loss of life (Day *et al.* , 2012).

Some elements of urban food insecurity can be considered a slow-onset humanitarian disaster. Van Wassenhove (2006) defines disasters as either slow- or sudden-onset, and further divides them into natural and man-made. In this thesis, food insecurity is assumed to be man-made, as the focus is on societal structures and effects of retail. In light of this, some principles of HSCM are applicable in food security solutions. For example, humanitarian supply chains need to adapt their strategic priorities as the disaster or event progresses, first administering supplies as quickly as possible but gradually shifting towards a demand-based strategy as people are in a more stable environment

and long-term recovery efforts can begin (Day *et al.* , 2012). Commercial supply chains also need to adjust their supply chain priorities not only over time but also based on the context of where they will be operating. While the conditions are unlikely to be quite as fast-paced as the humanitarian context, Day *et al.* (2012) suggest that commercial supply chains could learn from the dynamics and implement some of the approaches used in HSCM, including context awareness and priority shifting. This thesis locates within the humanitarian sphere but examines solutions within the commercial SCM and development policy contexts.

Social issues in the supply chain go beyond the immediate consequences of for-profit companies' actions. For example, including marginalised people in the supply chain, as identified as an SSCM social issue by Yawar and Seuring (2017), can further poverty alleviation strategies in different contexts and contribute towards the UN SDGs. Poverty alleviation strategies through commercial activities is explored in 'base of the pyramid' (BoP) research. BoP refers to the poorest, yet often most populous, part of the demographic (Prahalad *et al.* , 2012). The ethos of Prahalad *et al.* (2012) is that the BoP is fertile ground for innovation in terms of product development as well as shifting the commercial paradigm in a more inclusive direction. BoP literature has also garnered some criticism, as from some perspectives the interest in the BoP is nothing more than a lucrative new consumer base, as the older markets have become saturated (Hall and Matos, 2010).

With the integration of SSCM principles however, the BoP can be considered a valuable asset at each supply chain node, from production, distribution and retail, service provider and consumer (Gold *et al.* , 2013). This consideration leans more towards the direction of Hall and Matos (2010), and considers the urban poor to be more than a new market to conquer. The approach is to improve wellbeing and access for the people, rather than profits for corporations.

Incorporating diverse demographics and contexts in SSCM, especially from a corporate perspective, is complicated by the predominately

Western approach that the research and practice relies on (Touboulic and Ejodame, 2016). Kalkancı *et al.* (2019) highlight the concept of inclusive innovation, which they conceptualise into three categories: products and services, processes and business models, and supply chain innovation. This study focuses largely on the latter two. The division between the Global South and North, or the West and the rest, is not the sole diversifying factor, as demographics are extremely diverse in all contexts. Income and social status divide populations in all geographical areas, resulting in structural inequalities such as marginalisation from major supply chains (Kalkancı *et al.* , 2019). The contexts in this study are particularly interesting in this regard, as the income gap and social divide in both South Africa and Thailand are significant. What differentiates contexts in the Global South compared to the North (or West) are the institutional conditions and challenging business environments. Factors such as corruption and lack of infrastructure can make operating in these areas complicated, and present even more difficulties in implementing sustainability practices (Silvestre, 2015). The next section explores urban poverty, marginalisation and informality in more detail and relates it back to the social sustainability discourse.

2.3.2 Urban poverty and informality

Urban poverty and its complex dynamics must be understood to properly examine urban food security (Boonyabancha *et al.* , 2019). Poverty has long been linked with rural populations, and urbanization has been considered a positive force in terms of poverty reduction and general development (United Nations, 2018b). However, urban poverty is becoming increasingly prevalent due to rapid and uncontrolled urbanization, and research methods and poverty measures have not evolved with the change of context (Lucci *et al.* , 2018).

The multidimensional nature of poverty has been recognised in the past few decades, and a useful indicator for this is the multidimensional poverty index (MPI) (Lucci *et al.* , 2018). The MPI is grouped into three

dimensions: health, education, and living standards (Alkire *et al.* , 2020). A benefit of the MPI is that accounts for people experiencing multiple deprivations at once, such as suffering from food insecurity, not being able to attend school, and lacking access to proper cooking and sanitation facilities. The indicator is more comprehensive than merely measuring poverty through monetary indices, which can be misleading, especially in an urban context. These dimensions often concentrate in informal settlements, where individual households as well as entire neighbourhoods can suffer from multidimensional poverty (Lucci *et al.* , 2018).

There are many theories as to how and why informal settlements form, ranging from a transitional by-product of modernization to housing and land market failures resulting from demographics, economic factors or mismanaged institutions (Fox, 2014). According to Fox (2014), the only connecting factor among slums globally is urban poverty, and due to a dearth of data, empirical analysis of underlying factors in informal settlements is difficult. Migration from rural areas into cities is a significant factor in the growth of urbanisation as well as urban poverty (Panori *et al.* , 2019). Rural poverty drives people into cities looking for employment, and this puts strain on infrastructure in cities, resulting in informal settlements (Frayne and McCordic, 2015)

UN-Habitat (2016) has developed general defining factors for informal settlements, or slums, in relation to SDG11:

- Insufficient water services, such as pipe connection in the dwelling or a communal piped shared by more than five households
- Lack of sanitation infrastructure, i.e. public sewers, flush latrines, or septic tank
- Crowded living spaces: more than four people per habitable room
- Precarious housing structures
- No security of tenure (UN-Habitat, 2016)

While a useful set of parameters for e.g. cross-national comparisons and donor purposes, it lacks some nuances necessary for policymaking. The definition assumes that any household that meets even one criterion is considered a slum. Density of housing is not mentioned in the definition, nor is type of building structure, both of which are relevant notions in differentiating between e.g. some inner city tenements and informal settlements (Lucci *et al.* , 2018). Also not referred to in the definition is residential segregation, which refers to different groups inhabiting different physical and social environments in a given context, such as a city (Reardon and O'Sullivan, 2004). Race and social class are common segregating factors between groups. For example, in South Africa the townships are generally inhabited by people of the same race, i.e. black Africans or coloureds (McLennan *et al.* , 2016).

Absent from the definition is the notion of the urban poor paying a higher cost for infrastructure and service access, as these are generally provided by NGOs or civil society rather than municipalities or other urban planning entities (Frayne and McCordic, 2015). This leads to parallel flows of the same resource in the same city, where formally a resource, such as water access, is provided to wealthier inhabitants but the urban poor are forced to develop alternative access methods (Castán Broto *et al.* , 2012).

The informal economy is a collection of these alternative flows that form into an entire economy when e.g. the urban poor is marginalised by formal services and infrastructures. Activities within the informal economy include street vending, domestic services, entrepreneurship, waste picking and urban agriculture (Brown and McGranahan, 2016). Gutiérrez-Romero (2021) suggests a dualism between the formal and informal economy which contributes to the persistence of the informal economy. To function within the formal sphere, one must possess enough capital to afford the relevant costs, such as taxes and regulatory costs. This automatically excludes the poor segments of the population, who favour the informal sector despite the lower productivity and lack of social security such as pensions

(Gutiérrez-Romero, 2021). These are common criticisms of the informal sector, in addition to inefficient use of resources, functioning outside of environmental and safety regulations, and skewing development measures (Elbahnasawy, 2021). There are four schools of thought on the informal economy, which vary significantly in attitudes and the actions they suggest from e.g. the state and private sector (Brown and McGranahan, 2016).

The schools represent very generalised views, and they apply to different parts of informal economies in a variety of ways (Brown and McGranahan, 2016). Therefore, it is important to be aware of different approaches and what the implications might be for urban development. It has been widely assumed since the 1950's that the informal, or traditional, sector would be absorbed by the capitalist, formal economy through the formation of modern jobs that would raise people above subsistence level wealth (Chen, 2012). What these assumptions do not consider however, is the historical inequality that has persisted in societies with large informal economies, benefiting wealthier demographics (Gutiérrez-Romero, 2021). Changes in regulations can have some impact on the size of the informal economy, as well as the well-being of the people functioning within it, but addressing the underlying factors of inequality, poverty and marginalisation needs to be a priority (Brown and McGranahan, 2016; Gutiérrez-Romero, 2021).

In order to make economies more inclusive, Brown and McGranahan (2016) suggested that several features of the informal economy must be considered. First, the size of the informal sector and its continuous growth in certain contexts affirm its significance in sustainability efforts. Second, it is important to improve the relationship between the informal sector and authorities to invoke inclusivity. Third, environmental and health and safety regulations should be enforced in a constructive manner. Finally, its significance to the poorest households needs to be acknowledged and addressed in terms of social agendas (Brown and McGranahan, 2016).

In light of these features they also suggested introducing a new school of thought: the inclusionist school. Table 1 summarises the four pre-existing schools of thought on the informal economy, with the addition of the inculsionist school.. It centres around the idea that the poor should be included in urban planning and the informal sector embraced as a dynamic part of the political economy. This approach could address some of the underlying factors in informality, such as inequality (Gutiérrez-Romero, 2021), and help in lifting the stigma and negative connotations the informal sector faces. In the next section, different types of retail outlets used by the urban poor are introduced. The informal sector plays a significant role in food access, and therefore the inclusionist school is relevant in conjunction with urban food security. The next section explores how the retail landscape is changing in the Global South, and how that affects the urban poor and their traditional sources of groceries, such as the IFS.

Table 1 Schools of thought on the informal economy (adapted from Chen, 2012; Brown and McGranahan, 2016)

School of thought	Description	Causal roots
Dualist	Strong division between formal and informal sectors, 'survivalist' activity of the poor	Supply of labor exceeding employment opportunities
Legalist	The informal economy forms as a response to excessive state regulations of entrepreneurial activities	Regulation inhibiting reasonable entrepreneurship
Voluntarist	Informal workers find operating informally more beneficial than the formal system	Intentional avoidance of e.g. taxes and other regulatory costs
Structuralist	Formal sector exploiting informal workers to keep costs low and enhance flexibility	Unstructured economic growth
Inclusionist	Involvement and agency of the urban poor and the informal economy in policy decisions and markets	Marginalising policies from governance and private businesses

2.4 The role of SCM in urban food security

2.4.1 Retail

The urban poor use a diverse variety of retail outlets for their groceries. In Global south contexts, the food retail scene has traditionally consisted of independent and/or informal outlets such as markets, street stalls, kiosks and mom-and-pop shops (Smit, 2016). In the past few decade however the sector has undergone a modernisation wave, with supermarket chains penetrating the formerly decentralised market (Reardon and Hopkins, 2006; Battersby and Peyton, 2014). According to one approach, the economies of scale and supply chain improvements of the modern retail sector enable lower prices for better quality food than traditional retail (Reardon and Minten, 2011). However, this perspective has been criticized as it tends to favour wealthier populations while excluding the urban poor (Battersby and Peyton, 2014). Another exclusionary repercussion stemming from supermarket expansion is them driving independent retailers out of business, which may increase food insecurity in poor urban neighbourhoods through increased spatial constraints (Reardon and Hopkins, 2006; Berger and van Helvoirt, 2018).

Drivers to the changes in the retail landscape have been supply as well as demand based (Kelly *et al.* , 2014). Rising urbanization and incomes introduced people to a new array of retail choices, which led to an increase in demand for modern supermarkets (Banwell *et al.* , 2013). Supply was increased through liberalisation of trade in many Global South countries, allowing for additional foreign direct investment (FDI) and possibilities for market penetration of global large retailers (Nguyen *et al.* , 2013; Nandonde and Kuada, 2016). GLRs were however often unable to adapt to the context of the target market, as cultural issues as well as shopping dynamics differed significantly from the markets they were accustomed to serving (Amine and Tanfous, 2012).

In a study conducted in Tunisia, shoppers actively rejected the new modes of retail, i.e. hypermarket chains from France (Amine and

Tanfous, 2012). The main reasons for the rejection are: first, Tunisians feel as though they are being conned via dishonest deals advertised by the retailer. Second, they felt as though getting to and around the hypermarket was a waste of time and too much of an effort. They also reported a dislike for mixing with diverse social classes as a reason for the rejection. Finally, the harm that GLRs are invoking on smaller local entrepreneurs was an expressed worry (Amine and Tanfous, 2012). Similar concerns were raised by Wertheim-Heck *et al.* (2019) with the addition of the proliferation of processed and unsafe foods and their consequences on nutritional health in urban poor communities.

In many cities, such as Bangkok and Hanoi, there is active reduction and restriction on wet markets and informal micro retailers selling food (Kelly *et al.* , 2014; Wertheim-Heck *et al.* , 2015; Carrillo-Rodriguez and Reed, 2018). The reasoning behind the restrictions vary from food safety concerns and traffic obstructions to city aesthetics and unfair competition to formal business (Kawarazuka *et al.* , 2018; Nirathron and Yasmeen, 2019). In Bangkok specifically, the Bangkok Metropolitan Authority (BMA) has attempted to ban street vending on several occasions since 1973, citing the aforementioned reasons (Nirathron and Yasmeen, 2019). The effects of banning street vendors of food specifically is twofold: first depriving micro entrepreneurs of their livelihoods as well as urban dwellers of a major source of food (Carrillo-Rodriguez and Reed, 2018).

Food outlets IFS include micro retailers selling ingredients or prepared food at convenient locations and small quantities, which makes the IFS accessible and affordable to many urban poor communities (FAO, 2007). Many IFS entrepreneurs have fixed locations and schedules and operate at e.g. markets, but mobile vendors are also common, especially for prepared food. Vendors operating in these kinds of environments are collectively referred to as street food (Carrillo-Rodriguez and Reed, 2018). The role of street foods in the nutritional intake and shopping habits of poor urban dwellers is significant. Steyn *et al.* (2014) reviewed 23 studies on street food, predominantly from sub-Saharan Africa, concluding that street foods provided up to 50% of daily energy intake

of adults, as well as up to half of the protein consumed. Carrillo-Rodriguez and Reed's (2018) study in Bangkok found that on average respondents ate 9,58 street food meals per week. An urban food security baseline study in Southern African cities also indicates a significant reliance on the IFS for groceries, with 70% of respondents frequenting informal outlets on a weekly basis (Frayne *et al.* , 2010).

Formal retailers rely on adequate infrastructure to function, to e.g. receive goods in their outlets and make deliveries (Lagorio *et al.* , 2016). In a Global South urban environment, this cannot be guaranteed, as informal neighbourhoods generally have insufficient road conditions, challenging traffic management and lack of space for large delivery vehicles (Smit, 2016). Security is also an issue, as informal settlements can be hubs for illicit activity and violence (Duarte *et al.* , 2019). This can deter retailers from making large deliveries and can make financial transactions difficult. IFS outlets function in informal settlements despite these challenges (Roever and Skinner, 2016). However, as they function primarily as individual businesses, they charge higher prices to make up for missing out on the economies of scale. As they sell products in smaller quantities, the price difference may not be immediately apparent to consumers and due to their proximity in the neighbourhood, there is no need for consumers to pay for transport costs (Crush and Frayne, 2011a).

Because of the diversity of the outlets utilised by the urban poor in global South contexts, the dynamics differ significantly from those in the global North. In e.g. the UK and US areas deprived of food outlets or with poor access to sufficient nutrition are referred to as food deserts (Wang *et al.* , 2018). The concept and the contextual differences are summarised in the next section.

2.4.2 Food deserts

The term 'food desert' was first used in the UK in the 1990's to describe an area where there was little to no access to fresh food (Cummins and Macintyre, 1999; Wrigley, 2002). There has been active discussion in

the literature since the term was originated on the various factors that contribute to food deserts, e.g. economic, geographic, psychological or social (Shaw, 2006). A popular approach is the lack of supermarkets in a neighbourhood, particularly one that is economically already marginalised (Crowe *et al.* , 2018). In the United States, many inner city neighbourhoods have inadvertently become food deserts as supermarkets move to suburban locations only reachable by car, leaving urbanites dependant on public transport with very little options for their groceries (Walker *et al.* , 2010). Food deserts tend to be concentrated in low-income and often ethnic minority neighbourhoods (Wrigley, 2002; Crowe *et al.* , 2018). The lack of supermarkets in these areas has been explained by e.g. high operating costs, crime rates, or poor infrastructure (Weatherspoon *et al.* , 2015). Residents depend on convenience stores and fast food restaurants for their nourishment, resulting in a diet heavy in processed foods with low nutrition and high energy content (Widener, 2018). The health issues that emerge from the lack of access to fresh produce can marginalise communities and individuals further due to increased financial strain or lower mobility (Wang *et al.* , 2018).

Framing food deserts as areas with no supermarkets is a definition which gives all the power to private sector retail and fails to grasp the nuanced historical and geographic factors that influence neighbourhood demographics and food sources (Battersby, 2019). As supermarkets are a fairly recent development in the grocery retail scene in the Global South, the food dynamics are very different from e.g. UK or US. In the UK for example the grocery retail industry has shifted to a vertical network, where a small number of growers supply produce to the retailers through 'super middlemen' (Hingley, 2005). Retailers are customers of the super middlemen, who shoulder most of the responsibility for a product category to reduce costs for the retailers through a consumer demand-oriented approach. Smaller neighbourhood shops are therefore in a disadvantage, as they are not able to offer the lower prices made possible by the centralised distribution (Hingley, 2010). They are pushed out of the residential areas, leaving behind food deserts.

Battersby (2019) presents assumptions within the food desert framing that are inconsistent with the retail dynamics, particularly in the global South. A widely regarded assumption is that increased supermarket presence improves access to healthy food and fresh produce. While supermarkets are an important source of food for poor urban residents in many Global South contexts, the IFS, i.e. wet markets, neighbourhood tuck shops and street traders remain a significant source for fresh produce. The supermarkets have rather done the opposite and increased access to processed and previously unavailable products, both in Asian (Banwell *et al.* , 2013; Wertheim-Heck *et al.* , 2019) and African contexts (Demmler *et al.* , 2017). This has in turn accelerated the shifting of diets, and resulted in the IFS also selling unhealthy snacks such as potato chips and sodas (Battersby, 2019). In global North contexts however the absence of a supermarket is a hindrance in terms of access to fresh produce, as the presence of neighbourhood mom and pop stores is lacking, due to shifts in the supply chain (Hingley, 2010; Weatherspoon *et al.* , 2015).

While spatial and financial constraints are a major factor in the food security of households and neighbourhoods, it is imperative to relate it back to the multidimensionality of poverty (Alkire *et al.* , 2020). Factors such as living conditions, i.e., having appropriate infrastructure for cooking and adequate sanitation are highly relevant in food security, as is economic stability (Battersby, 2019).

It is not uncommon for poor urbanites to prioritise other expenses over groceries due to inconsistent finances, significantly jeopardising their food security. Battersby (2019) highlights that the assumptions regarding fresh produce, changing diets and the constraints that the common definition for food deserts encompasses misses the mark on the structural inequalities and societal flows that make up the urban environment. The next section explores these flows using UPE as a lens, juxtaposing the societal and physical flows of the urban context with that of food.

2.5 Urban political ecology and urban metabolisms

"*It is on the terrain of the urban that this accelerating metabolic transformation of nature becomes most visible, both in its physical form and its socio-ecological consequences*" (Swyngedouw and Heynen, 2003, p. 907).

Urban as a concept is complex and heterogenous to define. What constitutes a city is not merely the physical proximity of buildings and people, but the socio-economic metabolic flows that form through historical, political and spatial functions (Swyngedouw, 1996). Political ecology (PE) explores society's relationship with nature and the physical environment, and the processes of human interaction with each other emerging from said relationships (Brown and Purcell, 2005). The processes of human interaction with the physical environment include e.g. the relationships to places of residence and the division of natural resources among society. The power relations that emerge from these processes are central in PE, but increase in relevance when the focus shifts to an explicitly urban context, due to the cumulative socio-environmental processes that constitute a city (Swyngedouw and Heynen, 2003). Urban political ecology (UPE) examines these power relations in terms of urbanization patterns and access to urban spaces as well as resource division and service availability (Cornea *et al.* , 2017).

PE has its roots in radical thought, emphasizing exploitative action of the politically, financially and socially powerful over marginalised populations (Bryant, 2001). PE research has been influenced by many streams of research from Neo-Marxism to Dependency theory (Page, 2003; Biel, 2006). Particularly Dependency theory, where the 'core' depends upon resources of the 'periphery' for wealth accumulation, resulting in an exploitative relationship via financial and social power (Biel, 2006), is relevant in an urban context. UPE was first developed to examine the complex relationship between cities and nature, deriving from as far back as the industrial revolution where Marx's 'metabolic rift' first started to occur (Foster, 1999). The origins of the rift are in urbanization as the exodus from rural areas and subsistence

farming turned people from production factors to costs in terms of food production (Steel, 2009). In some of the first UPE writings, Swyngedouw (1996) uses water as an entry point into exploring the role of nature in the city, and this perspective can be applied to food as well. Both resources have symbolic, cultural, and socio-economic properties along with their life-sustaining biological functions. There are also inherent inequalities in the dissemination of both water and food, as those in control of the respective supply chains favour wealthier consumers. Therefore, food (or water) insecurity rarely derives from scarcity or fundamental unavailability, but rather societal factors such as financial entitlements and position in the political economy (Sen, 1981; Allen *et al.* , 2006).

Due to these social factors, UPE is an appropriate framework for analysing food security. Urban contexts are a nexus of socio-ecological processes, which are at the heart of UPE research (Agyeman and McEntee, 2014). Food access also deeply intertwines physical and social factors, such as the neo-liberal market forces that ensure that in a physical location, such as a city, it is ensured for some and denied others. UPE is capable of examining the material conditions that determine which households or neighbourhoods suffer from food insecurity through spatialising socio-ecological processes (Agyeman and McEntee, 2014). The commodification of food has exacerbated the notion of entitlements determining access, as globalization and the complex infrastructures enhance the notions of power in the food supply chain (Heynen, 2006).

Urban metabolic flows are the physical and social flows that make up the urban environment. Kennedy *et al.* (2007, p. 44) define urban metabolism as "*the sum total of the technical and socioeconomic processes that occur in cities, resulting is growth, production of energy, and elimination of waste.*" Like UPE, examining urban metabolism began via the society-nature dichotomy, where modernization and urbanization had seemingly driven people further from nature than ever before (Wachsmuth, 2012). Wachsmuth (2012) divides the study of urban metabolism historically into three 'ecologies'. First, the Chicago

school of the early 20th century subscribed to the society-nature divide and considered cities to be non-natural. After Wolman's (1965) seminal study included nature as a source of resources and destination of waste into the social processes, began the era of industrial ecology. Finally, UPE emerged and brought forward the hybrid approach to urban nature, where the city is understood to be an amalgamation of socio-natural processes (Swyngedouw and Heynen, 2003; Wachsmuth, 2012).

Measuring physical flows of material in and out of cities is a central concept in the environmental sustainability of urban areas. Through basic accounting activities, efficiency in resource use, amount of waste generated and levels of greenhouse gases can be calculated and their human induced effects recognized (Conke and Ferreira, 2015). The focus of this thesis is however in the social spectrum of sustainability, therefore the UPE perspective is more relevant than industrial ecology. The environmental and mechanical focus on urban metabolism can ignore the social processes of reconfiguring nature, therefore depoliticising urbanization into a mere exchange of material flows (Swyngedouw, 2006; Castán Broto *et al.* , 2012). As the socio-ecological flows in an urban context are recognised, it is then possible to subvert those flows in order to build a more equal and sustainable city (Castán Broto *et al.* , 2012).

By studying the distribution and control of goods throughout the city, it is possibly to examine the reproduction of urban inequality (Castán Broto *et al.* , 2012). This can be conceptualised via e.g. food deserts, where the wealthy areas of town are abundant in supermarkets and diverse produce, but residents of poorer neighbourhoods are spatially and financially constricted (Battersby and Crush, 2014; Weatherspoon *et al.* , 2015). However, the food desert is a nuanced concept with underpinnings in multidimensional societal factors (Battersby, 2019). Juxtaposed with the MPI (Alkire *et al.* , 2020), the fundamental availability of food and the role of supermarkets becomes less relevant, as does the economic framing of the food desert. The assumption that the urban poor rely on private sector outlets for their food access is a

reductionist one. Especially in a global South context, the formation of 'parallel metabolisms' of a particular resource is a common occurrence (Castán Broto *et al.* , 2012). The IFS is a typical parallel metabolism, as it works alongside a formal flow of goods, in this instance food. In some contexts, the one considered a parallel flow is in fact worth more in monetary terms than the corporate, formal flow (Greenberg, 2017). This further highlights the notion of power and mobilising flows of resources in order for the urban elite maintain it in its grasp (Heynen, 2006; Castán Broto *et al.* , 2012).

2.6 Research objectives

Urbanisation has been steadily increasing throughout the past decades, with currently over half the global population living in urban areas. Especially in a Global South context, the urban migration has predominately taken place within the poor demographic, resulting in poverty shifting from a rural focus to an increasingly urban issue. Food insecurity is a consequence of growing urban poverty levels, but has generally been considered as a rural issue, resulting from a fundamental lack of food.

This thesis is an interdisciplinary study based in SCM, and urban development studies. Most of the research in urban food security has been done under the development studies stream. In development research and policy, the rural bias and prioritising other urban issues has left urban food security under researched. The disconnect of examining production and consumption individually rather than as a part of the food supply chain further ignores urbanites, as they are dependent on the market for their nourishment. SCM on the other hand focuses on factors like on-shelf availability and prevalence of grocery outlets, marketing mainly where potential for profits is the greatest. The urban poor are a large and lucrative demographic, but an inclusive supply chain strategy should consider their specific access issues and shopping dynamics rather than going in with a one-size-fits-all strategy.

Table 2 links existing literature to the RQs and the empirical studies in this thesis. Four major themes can be raised from the literature. First, spatial, and financial access to food outlets is crucial in ensuring food security for urban citizens, therefore location and prevalence of outlets (both formal and informal) and levels of poverty are examined within this theme. The overall aim of the thesis in terms of this theme is to emphasize the role of retail and distribution networks in urban food security. Second, the underlying societal factors arise from the literature. In South Africa, the residential and social segregation according to demographics largely determines citizens' food security status. In Bangkok poor neighbourhoods are being evicted to make way for office, retail, and residential buildings for the wealthier residents. Traditional forms of food retail are also being marginalised out of their usual locations. Third, both locations indicate a significant dependence on micro-retailers and the IFS. This dynamic is crucial in understanding how poor urban neighbourhoods access food, and requires additional empirical examination, which this thesis contributes to. Last, questions of quantity versus quality of the food consumed, and the nutritional implications deriving from this are important to highlight. The TBM is becoming increasingly prevalent in Global South contexts, and formal retailers are in part contributing to this issue by making processed and calorie-dense foods more available and having limited selections of fresh produce in outlets located in poor neighbourhoods.

Table 2 Linkage of literature to RQs and empirical studies

Themes in literature	*Essay 2 (SA)*	*Essay 3 (BKK)*	*Thesis*
Spatial and financial access	Location of outlets, availability of products, poverty (RQ1&2)	Poverty, prevalence of micro-retailers (RQ1&2)	Focus on retail/distribution of food rather than only production
Underlying societal factors	Residential segregation (RQ1&3)	Gentrification (RQ2&3)	Urban inequality
Importance of micro retailers	Spaza shops (RQ2)	Vendors, markets, shops (RQ2&1)	Response to urban neighbourhood dynamics
Nutritional implications	Triple burden of malnutrition (RQ1&3)	Changing diets (RQ2&3)	Triple burden of malnutrition

The objective of this thesis is to investigate the dynamics and perceptions of the urban poor's food schemes, and how inclusive food SCM, specifically retail, can contribute towards food security. The food supply chain is a relevant addition to the urban food security research stream, as the market dependence of the urbanites highlights issues such as distribution of outlets and diversity of produce. The interdisciplinary approach of this thesis contributes to the urban food security research with an empirical study and by synthesising issues contributing to food insecurity. The thesis proposes solutions for societal impact as well as for policy and business.

The objective is derived from the extant literature, resulting in the three research questions regarding specific dynamics of the poor urban neighbourhoods (RQ1), the role and relevance of micro retailers (RQ2) and the social sustainability of the food supply chains (RQ3). The following section presents the research paradigm and methodology of the empirical work, followed by a synthesis of the results.

3 RESEARCH PARADIGM AND METHODOLOGY

A paradigm is a set of first principles that define the individual's place in the world, their relationship to the different parts of that world, as well as the nature of that world itself (Guba and Lincoln, 1994). This section discusses the ontological, epistemological, and methodological approaches adopted in this thesis, which position the research within an inquiry paradigm. The paradigm adopted in this thesis is social constructionism. The implications of this positioning are presented below with regards to ontology and epistemology as well as methodology. Additionally, the research is carried out and analysed based on a reflexive approach (Alvesson and Sköldberg, 2009).

3.1 Ontology and epistemology

Ontology refers to the assumptions relating to the basic characteristics of phenomena (Gioia and Pitre, 1990). Questions such as the nature of reality and what can be known about it are the central focus, as well as how reality works (Guba and Lincoln, 1994). Within the social constructionist scope, reality is not naturally occurring, but rather constructed by those functioning within it (Alvesson and Sköldberg, 2009). Burrell and Morgan (1979) exhibit two ontological approaches, the subjectivist and objectivist viewpoint. Scientific inquiry has historically been oriented toward an objective world view, striving for non-debatable facts regarding reality. Social science, within which this thesis also situates, examines relationships between factors and their consequences, and it is therefore difficult to remain entirely objective (Chia, 2003). The nominalist perspective that derives from a subjective approach is in line with the social constructionist paradigm this thesis adheres to. As well, an alternative to being, stability and regularity which hold ontological primacy in scientific inquiry regardless of orientation, Chia (2003) suggests an ontology of becoming. This approach advocates a perspective, where moments within 'reality' are consequences of historical processes, which are ordered into meaningful fragments by language. These fragments go on to form

patterns over time, which can be examined from multiple perspectives through e.g. scientific theories (Chia, 2003). Therefore, knowledge as well is subjective, as the outcome will depend upon the lens through which the process is examined.

The spectrum of knowledge starts from something 'real' that can be acquired on the one extreme, to a something that needs to be personally experienced on the other (Burrell and Morgan, 1979). Philosophers have frequently argued for knowledge that arises from processes rooted in ideologies, interests or power rather than stagnant, rational, and objective knowledge (Alvesson and Sköldberg, 2009). Epistemology refers to the nature of the relationship between the knower and the knowledge to be acquired (Guba and Lincoln, 1994). One's ontological position therefore needs to be established, as subjective knowledge cannot be acquired objectively or vice versa. In line with the ontological approach, this thesis assumes the relationship between knowledge and knower to be socially constructed and subjective. Inquiring into the underlying factors behind acquired knowledge is a relevant part of the social constructionist approach, as well as the assumption that social realities are subject to change as those who perceive them become more informed (Guba and Lincoln, 1994).

Underlying factors include the political position of the researcher, as well as the motivations behind any empirical studies. Physical and natural science explanations likewise must not be accepted without a critical perspective (Forsyth, 2008). In his analysis of Piers Blaikie's work on political ecology, Forsyth (2008) explores the vested interests in seemingly objective research results. Depending on the objectives of the research, the results are likely to have different ramifications. If those in power are going to lose dominance or profits due to the results, no matter how ecologically or socially detrimental the consequences, improvements are unlikely to be made based off them (Forsyth, 2008). This thesis assumes all research to be in some ways subjective and have underlying, constructed motivations deriving from the researcher or the party for whom the research is being conducted. Epistemologically, this type of approach assumes the researcher and the subject of

research to be linked through a transaction, which creates the findings as the research proceeds (Guba and Lincoln, 1994).

The personal interest of the author in the Global South and the food supply chain derive from an academic, personal, and professional background. The ontological and epistemological underpinnings of the thesis reflect the personal philosophies of the author. A social constructionist and subjectivist approach, and a critical perspective are all aspects to which the author subscribes. The inductivist approach introduced in the next subsection also reflects this point of view.

3.2 Methodology

3.2.1 *Theory development and field research*

This thesis adopts an inductive approach, which aims to further develop theories through observed patterns. The subject of urban food security is still fairly under researched, which would favour an exploratory and by consequence an inductive perspective. Induction begins with observations and once enough observations have been made, it is possible to draw conclusions (Alvesson and Sköldberg, 2009). Within strict inductivism, the number of observations needs to be large, they need to be repeated under similar conditions and none of them must conflict with the conclusions derived from the observations (Chalmers, 1982). Carlile and Christensen (2004) suggest that most research functions in a cycle like manner, where initially researchers engage in an inductive process of observation, categorization and association after which they move on to a deductive manner of hypothesis testing they have previously formulated. This thesis rather than testing a hypothesis, aims to add to an existing array of observations to strengthen theory in that stream.

Building on theories and relating them to empirical material in a novel way is how researchers make contributions to existing streams of research. Locke and Golden-Biddle (1997) frame it as constructing intertextual coherence and problematizing the situation. By coherence

construction they refer to e.g. drawing connections between research areas, showing progress in research over time and highlighting debates or conflict within a research area. Once the coherence, or lack thereof, has been established it is time to move on to problematizing the situation. Sandberg and Alvesson (2011) contrast gap-spotting and problematizing as different ways to establish research questions. Gap-spotting is the overwhelmingly more popular way of going about it, but Sandberg and Alvesson (2011, p. 32) present problematizing as the "obvious alternative". Locke and Golden-Biddle (1997) also discuss this approach, but for this thesis Sandberg and Alvesson's (2011) more Foucauldian approach of "thinking differently as opposed to how is already known" works better. Also, their approach of not making problematizing the goal of the research, but rather a way of challenging the underlying theories and assumptions is on the same ontological and epistemological plane.

Collecting empirical material, i.e. doing fieldwork, in an urban poor context is a challenging endeavour and requires active collaboration with different parties. Sabri *et al.* (2019) suggest that collaborative research is a useful approach for humanitarian supply chain research. While this thesis is not strictly within the humanitarian SCM scope, there are sufficient overlapping themes that similar methodologies can be utilised. Collaboration in a humanitarian setting can refer to for example researcher-practitioner, or researcher-affected population collaboration. The aim of collaborative research is to achieve theory building and mutually beneficial knowledge creation through action, intervention and transformation (Sabri *et al.* , 2019). The key to achieving this is combining the more spontaneous, contextual, and practical knowledge of practitioners and the methodical and exhaustive knowledge of researchers (Shani *et al.* , 2012). This thesis aims to develop theory through the empirical evidence collected from practitioners in South Africa and consumers in both South Africa and Bangkok.

3.2.2 Research design

This study would have been impossible to conduct without effective collaboration with multiple partners in both locations where empirical material was collected. The South African study in essay 2 of this thesis was conducted in cooperation with an NGO working in the township. The researcher initially contacted the NGO through email after investigating different organizations working in the township. The NGO was well established in the neighbourhood, meaning that accompanied by the personnel, the researcher was able to explore the township and interview its residents safely. Part of the organized activities for the beneficiaries of the NGO were workshops and gatherings, which was a good opportunity to interview them at the premises. The employees of the NGO participated in the interviews both as interviewees and as translators when beneficiaries or township residents preferred to speak Xhosa. While the interview guide and other preparations for the data collection were done by the researcher, the results of the study are being shared with the NGO, thereby co-creating mutually beneficial knowledge.

It was important to combine the different types of knowledge from the different groups in interviewees, more specifically defined in essays 2 and 3. The social workers' interviews were imperative in gaining a comprehensive background of the South African township as well as a general overview of the population. Ethically, the researcher was wary of asking interviewees about issues such as sexual violence or health, regarding which the social workers were able to provide discreet and anonymous details on.

The empirical material for essay 3 was collected in Bangkok, Thailand and required collaboration with partners as well. Access to one the neighbourhoods was gained through a community organization, a guide, who lived and worked in the area, and a translator. Contact with the organization was established through social media. The other two neighbourhoods were accessed via a fellow researcher, who assisted with translation, also found through social media. While the assistance

of the partners in Bangkok was absolutely vital to the success of the study and they participated gladly, collaboration ended once the empirical study was concluded. Interview guides for the consumers and retailers and social workers who formed the respondent sets in both South Africa and Thailand are presented in Appendices 1 and 2 respectively. Special care has been taken to ensure the anonymity of the interviewees. The name and specific location of the township is not mentioned to ensure the privacy of the residents and anyone involved in the NGO. This research is in line with ethical guidelines of the time of the data collection.

The interview guides were developed to answer the research questions. The themes arising from literature, as presented in Table 2, were used as a basis for the interview guides with questions specifically formulated for consumers as well as the practitioners. Interviews were the method of choice within the resources available to conduct these studies, giving additional significance to the interview guide and its theoretical underpinnings. As more specifically discussed in the next section on reflexivity, the interview always presents limitations in the form of cultural and language barriers and other communication gaps. Security concerns also prevented the researcher from spending as much time in the neighbourhoods as would have been possible in terms of time.

Like HSCM, urban food security research is extremely context dependant, and would benefit from additional field research (Sohn, 2018; Sabri *et al.* , 2019). Field research is defined as using observational approaches to conduct social research in a circumscribed environment, where the researcher has a relationship with those they are researching (Burgess, 1984). Field research is primarily used to understand phenomena and why certain processes occur or do not occur (Meredith, 1998). This is usually achieved through multiple sources of data; primary data such as interviews and observations, as well as secondary data consisting of desk research or documents (Sohn, 2018).

The sites in this study complement each other in their differences, providing insight into food security factors in culturally and geographically diverse contexts. The township in South Africa is a small one, which was advantageous in terms of gaining access as a foreign researcher. The collaborating NGO was an essential partner, as they work with nutritional issues and are familiar with the dynamics and residents of the neighbourhood. They have also previously collaborated with researchers and were extremely welcoming. Contact with retailers was established through recommendations from the university hosting the researcher. The initial interviewees contacted were able to present additional contacts to the researcher, so a snowball effect took place. An advantage in South Africa was the lack of language barrier, so contact was easily established, and the researcher was able to interview the retail representatives (with the exception of the spaza owner) on her own. In Bangkok however it was much more difficult to contact representatives of formal retail, due to the language barrier on the one hand but also the hierarchical nature of Thai society on the other. It was not possible for the researcher to call and arrange a casual meeting for an interview such as it was in South Africa. Unfortunately, it was not possible to set up meetings with representatives within the time frame of the Bangkok visit.

This thesis follows the definition of field research by Sohn (2018 p. 152) to specify the method as 'exploratory in nature in order to obtain first-hand knowledge and empirical materials in field sites'. Due to the social nature of the empirical study, the role and relationship of the researcher and subject of research must be reflected upon thoroughly. The following section incorporates reflexivity (Alvesson *et al.* , 2008; Alvesson and Sköldberg, 2009) as part of the field research, reflecting upon the biases and social interactions that occurred during data gathering.

3.2.3 Reflexivity

Reflexive scientific inquiry focuses on the situated nature of knowledge in light of the social processes within which it is explored, as well as

highlights the position and biases of the researcher during the research process (Alvesson *et al.* , 2008). For the empirical work conducted in this thesis, considering the contexts in which the empirical material was collected, this is a particularly important consideration. The premise of the thesis is to gain insight into marginalised communities. As the researcher was not in any way a part of the communities that the studies were conducted in, the influence of that outsider role and impression must be acknowledged.

The two contexts represent relevant environments and demographics in terms of the subject of this thesis, but it must be acknowledged that they were also chosen due to convenience factors, as the data collection was conducted in conjunction with research visits to universities in South Africa and Bangkok. This did not influence the integrity of the research and the neighbourhoods and demographics interviewed were appropriate.

Collecting empirical material in a South African township is complicated for several reasons. First, security. Townships are generally inhabited by Black Africans, meaning that as a white woman, the researcher would stick out and be subject to unwarranted attention and actions if attempting to access the township alone. Second, the racial tensions in South Africa might deter some people from talking to a white researcher. During the data collection process, there were several instances when interviewees participated much more willingly once they were told the researcher was a foreigner, rather than a white South African. Third, while English is widely spoken in South Africa, many of the township residents were more comfortable speaking Xhosa, which the researcher does not speak.

In Bangkok the challenges were slightly different. The language barrier was much higher, as the researcher does not speak Thai and knowledge of English is not common, especially among the interviewee target demographic. While security was much less an issue than in South Africa, it was still not recommended to enter the neighbourhoods alone. It would have been futile in any case, due to the language obstacle.

It was also more difficult to contact potential partners in Bangkok. Persistent emailing and social media messages finally yielded partners that assisted with neighbourhood access, interviews and translations.

The primary data in this thesis consists of interviews. According to Alvesson (2003, p. 14) the research interview must be considered a 'a socially and linguistically complex situation'. The empirical material collected for this thesis is particularly complex, due to the factors mentioned above. Considering the social constructionist ontological and epistemological underpinnings, there are many larger societal aspects that warrant attention not just in the individual interviews, but within this analysis. Race is a rather classic discussion within social constructionism versus positivism (Alvesson and Sköldberg, 2009). In both locations, the subject of race was on the table, but much more so in South Africa, for historical reasons. In Bangkok it was merely the fact that the researcher was a different race from the interviewees, spoke a different language and came from a different culture. In South Africa however the situation was more complex, as the race question is so deeply entrenched in society.

In the interview situation the researcher was completely dependent upon the translators and had no choice but to trust them to relay the questions as intended.

3.3 Quality of the research

For qualitative and exploratory research, trustworthiness is equally if not more important to establish than for quantitative 'conventional' scientific inquiry (Lincoln and Guba, 1985). Four questions are traditionally posed regarding research to indicate that it is valuable and viable. First, the *truth* value of the inquiry should be demonstrated, particularly in relation to the respondents and context within which the research was carried out. Second, does the research have *applicability* in other contexts and how can this be determined? Third, is it possible to determine whether there is *consistency* of the findings, were the study to be replicated in the same context? Finally, can *neutrality* be

established, so the results of the study are not influenced by the biases of the researcher and/or respondents (Lincoln and Guba, 1985).

The empirical papers have specific discussions of the trustworthiness criteria of both individual studies. Both studies follow the same criteria: transferability, dependability, confirmability, and validity (Lincoln and Guba, 1985). These four qualities combined amount to research trustworthiness. Halldórsson and Aastrup (2003) and Goffin *et al.* (2012) explore these qualities for logistics and SCM research, which has traditionally relied on positivist and quantitative criteria to determine rigour. As the disciplines began to embrace qualitative inquiry as well, an appropriate framework was needed. This section explores how the criteria apply in this thesis.

Transferability refers to generalizable claims made by the research. Qualitative and constructivist research, such as this one, is context and time dependent, which makes general statements stemming from the results difficult to justify (Goffin *et al.* , 2012). An in-depth understanding of one context can however be useful in interpreting another, and conducting similar research in a different context and making comparisons across them strengthens transferability (Wallendorf and Belk, 1989). Both locations of this research used a similar interview guide for the consumer interviews (see Appendix 1), which allows for cross-context comparison. The South African study was conducted first and having in-depth insight into that context made the Bangkok data collection and interpretation slightly easier.

Dependability of research is established through trackability of the research, whereby the steps taken during the process are carefully documented and accurately described for transparency (Halldórsson and Aastrup, 2003). The expectation is that were the study repeated, it would yield the same results every time. In qualitative data collection however, it is common for the methods to adapt and shift according to the context (Lincoln and Guba, 1985). With an inductive approach, the existence of a single objective reality is not supported, and therefore the results are acknowledged to be consequences of that particular

research instance (Wallendorf and Belk, 1989). Trackability and transparency are accordingly of increased importance, as is the establishment of the ontological and epistemological underpinnings to indicate the approach.

The integrity of the findings is tied to the data and must be confirmable via the data sources. Confirmability therefore depends on the acknowledgement of researcher biases and motivations. In qualitative research and an inductive ontology, objectivity is not a realistic endeavour and this is recognized within the research process (Wallendorf and Belk, 1989). The data interpretation process begins in the field and continues throughout analysis and result write up. Walldendorf and Belk (1989) suggest triangulation and reflexivity as steps researchers can take throughout the interpretation process to ensure confirmability. In this thesis triangulation was approached through thorough recording of the interview data. Notes were taken during the interviews, which was also recorded and later translated and transcribed. As the interviews were conducted by one researcher and translators, it was not possible to compare data among researchers. Reflexivity was discussed in the previous subsection of this chapter.

Finally, credibility refers to the interpretation of reality of the researcher and respondents (Goffin *et al.* , 2012). In this research the ontology is constructionism, where each individual builds their own reality. The interpretation of the data therefore takes the different worldviews and contexts into consideration and acknowledges issues such as language barriers and cultural differences. A summary of the three essays underpinning this thesis now follows.

4 SUMMARY OF ESSAYS

4.1 Essay 1: Towards inclusive urban food supply chains

This essay has been published in the edited book *Food Supply Chains in Cities: Modern tools for Circularity and Sustainability* (eds. Aktas and Bourlakis, 2020) and is attached as Appendix 3. It examines literature from three different fields within the social sciences: supply chain management (SCM), urban geography and development studies. The paper uses principles of structured literature review (SLR) and content analysis to form a holistic review of urban food security issues deriving from the three disciplines. The addition of SCM into urban food security research is novel and addresses a research gap, where the role of grocery retail and market access is examined critically, juxtaposed with existing development studies and geography research. The paper includes 61 pieces of literature, of which 52 were academic journal articles. Division among the three subjects was fairly equal, and most of the articles were published in the mid-2010s.

Several main themes emerged from the literature: rural bias, urban political ecology (UPE), urban poverty, and food SCM and retail. The rural bias refers to food security having been treated as a rural issue, with most policies and agendas geared towards agricultural production and very little explicit mention of the unique factors within urban food security (Crush and Frayne, 2011b). Urbanization is at an all-time high and food security in cities often is not directly related to availability but rather a question of access. Urban poverty as well as the SCM factors relate directly to access issues. Financial constraints derive from poverty, as people do not have monetary entitlements to afford food. SCM factors on the other hand contribute to spatial constraints, through e.g. the physical location of grocery outlets which are generally placed in wealthier neighbourhoods for profit maximisation. The absence of retail grocery retail outlets can lead to a food desert, an area where access to nutritious food is limited either spatially or financially. However, in many Global South contexts supermarkets are only one

of many sources of food, as the informal food sector plays a significant role. Therefore, the food desert concept in a Global South concept is more complex and less tied to formal retail.

Sustainable SCM (SSCM) strives to diversify its reach and become more inclusive of Global South contexts. However, social sustainability is still lacking in the literature (Yawar and Seuring, 2017), as environmental issues take precedence. Through the examination of the urban metabolic flows, this gap can be addressed through food security research. Urban political ecology provides a useful lens for SSCM to examine social flows, as it considers the urban context to be a nexus of socio-ecological flows, rather than merely a physical location.

This paper brings urban food security into the SSCM domain and acts as a springboard for more interdisciplinary research in the subject. The subsequent empirical essays are strongly based on this literature review as well as additional specific literature pertaining the respective contexts. Chapter 2 of the thesis synthesises as well as adds to the literature in the first essay.

4.2 Essay 2: South Africa

This essay is currently under third review at *International Journal of Logistic Management* and is attached as Appendix 4. Access to the food supply chain varies significantly among different urban areas and their inhabitants. As urban dwellers are typically dependant on the market for their nourishment, lack of access can lead to notable levels of household food insecurity. This paper explores this phenomenon through an empirical study in the Western Cape, South Africa. The paper's theoretical base is in SSCM, with strong links to development studies, which brings insight into the deeper societal structures that underpin food security issues in poor urban contexts. SDGs 2 (Zero hunger) and 11 (Liveable cities and communities) act as a platform for the complex and interdisciplinary nature of the research. The paper uses urban metabolic flows as the theoretical framework, highlighting the complex underlying social processes that lead to neighbourhood

and/or household food insecurity.

The empirical data of this paper consists of 59 interviews conducted in the Western Cape, South Africa. A majority of the interviewees are residents of a township on the edge of small city. The township dwellers are further divided into two categories, beneficiaries of an NGO (n=25) and general residents of the township (n=24). The NGO was the main partner in the field, allowing for safe access into the township, establishing initial contact with the interviewees as well as assisting with translation when necessary. Additionally, ten interviews were conducted with grocery retail experts and social workers working in the NGO.

South Africa is an interesting context for food security research as the economy is stable and it is one of the most urbanized countries in Africa. Formal food retail is highly concentrated among a handful of players, but the traditional retail sector is strong as well. As a remnant of the apartheid era, residential segregation in South Africa remains evident, which has an impact on food access as well as the types of outlets people use.

The research questions this paper addresses are:

1. How do spatial and financial constraints influence food shopping dynamics in an urban poor context?

2. Which aspects of the triple burden of malnourishment represent the biggest challenges in an urban poor context?

3. How do these factors affect food retail SCM in this context and what are some potential solutions?

The findings indicate that groceries are a significant expense for all the township dwellers, but especially the beneficiaries of the NGO, all of whom were unemployed women. All of them spend half or more of their income on groceries every month. Their sources of income varied

from government grants and family assistance, to almost nothing at all. The general residents of the township all had some form of income from either entrepreneurial activities or a salary. Their food expenditure was less concentrated, but still a significant monthly expense. Shopping habits were similar across the data set, supermarkets and spaza shops being the main sources of groceries.

The question of food quality and nutritional value came up consistently in the interviews. South Africa suffers from high levels of TBM, and many interviewees admitted to diet related health problems. Access to fresh produce was limited in the townships, due to both spatial and financial concerns. Most diets consisted of starchy staples with very limited vegetables or meat. Education on healthy food choices is needed, as well as improved access to fresh produce.

Data on townships and such contexts is needed in order for formal retail to serve them better, which would benefit both the inhabitants of the townships, as well as the retail chains. However, it is important to recognize the relevance of the traditional sector in their ability to respond to the unique dynamics of the townships. The spaza shops are located around the township, in easily reachable locations, whereas supermarkets are far away and difficult to reach for many inhabitants.

4.3 Essay 3: Thailand

This essay is under final preparation for submission to *British Food Journal* and is attached as Appendix 5. It investigates the food retail supply chains in Bangkok, Thailand and how they affect food access for the urban poor. Thailand has undergone a retail modernisation process in the past few decades, where Western style supermarkets have penetrated the market, which has previously been comprised of traditional wet markets and street food vendors. The traditional grocery supply chains still play a significant role in the food access and security in Bangkok, especially among the urban poor. As the supermarkets further penetrate the market, those who still rely on the traditional forms of retail are left behind, as inevitably the modern supply chains

encroach on the market of the traditional sector. This paper uses an interdisciplinary approach, combining urban development studies with supply chain management in an urban political ecology framework to analyse the underlying factors in the marginalisation of the poor by the formal retail sector and the spatialisation of the urban poor in the city of Bangkok.

The urban poor has been researched mostly via its value to the global value chain in terms of innovation and business activities. The less saturated markets of the urban poor are of interest to the global large retailers (GLR) working in the grocery supply chain, but implementing a modern, Western style supermarket culture has not always been successful. GLRs have failed to adequately adapt their strategy to the context, missing important nuances and dynamics in the culture.

SSCM literature strives to become more inclusive e.g. in terms of the contexts it pertains to and to be more aware of the social issues that emerge along the supply chain. The food supply chain has become more global and centralised, further enhancing the power dynamics that influence food security and access for populations such as the urban poor. With SSCM, these power dynamics can be put into focus and some of the underlying factors for marginalisation considered.

This essay focuses on the following RQ’s.

1. What currently comprises urban poor food retailing in Bangkok and how is food retail modernisation affecting it regarding food security and access?

2. How do the different forms of informal food sector (i.e. street food vendors, wet markets) impact urban poor purchasing and nutritional needs?

Thirty interviews were conducted for this study, in three different neighbourhoods in Bangkok. The overwhelming majority of the respondents depended on the traditional forms of grocery retail i.e. wet

markets and street food vendors. The respondents felt uncomfortable with modern forms of grocery, and they did not trust the quality of the food in supermarkets. The social relationships formed with regular vendors were important and many people were able to buy with credit if they were struggling financially. Eating prepared dishes from street food vendors was the main source of nutrition for many respondents, especially those living alone or with smaller households. Cooking was popular with larger families. Food prices have been rising steadily in Bangkok, and this was a concern for many respondents, regardless of their dining habits.

The traditional or informal food sector is the backbone of food security in Bangkok. There are significant efforts by the BMA to limit street vending, and wet markets are being discontinued to make way for condominiums and office buildings. Interdisciplinary studies such as this one would emphasize the underlying aspects that contribute to lack of food access and security in poor urban neighbourhoods.

5 SYNTHESIS AND DISCUSSION

In this chapter the findings of the two empirical studies are presented, juxtaposed with the literature review. The sections are arranged according to the three thesis research questions.

5.1 RQ1: Food dynamics of urban poor neighbourhoods

Food security discussions generally focus on either production or consumption. Making agriculture more efficient, improving yields for small holders, which crops can survive inevitable extreme weather patterns are just a few examples of the production related questions. Research and policies on consumption on the other hand focus on e.g. aggregated malnutrition statistics and public health concerns deriving from those. While both of these are valuable streams of research and require sufficient attention, the processes that take place between production and consumption affect food security in equal measure but receive less attention in academia or policy planning. For urban residents, the supply chain of food between production and consumption is particularly important as urban dwellers are market dependant for their nourishment. This notion is explored in all three papers. Paper 1 as an LSR sets the stage for the empirical studies, which are examined in papers 2 and 3.

The central factor surrounding both production and consumption is availability, making sure there is fundamentally enough food to satisfy nutritional needs. The SCM perspective on the other hand brings the focus to access, which is the central concept in this thesis. In an urban context, such as the two locations analysed for this thesis, food is readily available and even plentiful. This is considered in literature to be one of the reasons as to why urban food security has not received warranted attention in research and policy; fundamentally food is indeed available. However, the food existing does not guarantee equal access to it. This became particularly apparent in the empirical studies; both contexts reported financial access issues and spatial access issues.

The data collected in South Africa indicates that deeply rooted societal factors play a large role in the grocery retail processes and locations. One of the largest grocery chains in the country has three different categories of stores, arranged according to the demographics of the intended customers. High end hyper- and supermarkets with wide selections of fresh produce and both imported as well as local goods are marketed to the wealthier demographics and placed near wealthy neighbourhoods. The lower end supermarkets have a significantly narrower selection consisting mostly of dry staples and canned goods.

Townships in South Africa are a legacy of the apartheid era. Even though no longer enforced in any formal way, the residential areas remain segregated, and opportunities for those in townships to pursue e.g. higher education are limited. Those who live in townships represent an extremely lucrative market due to their large numbers. The dynamics of grocery retail in the townships are not well known in the corporate echelons of the supermarket chains, which means they are missing out on significant opportunities. The interviews with the retailers in South Africa confirm the lack of knowledge of the townships' grocery habits. For example, a clear majority of the interviewees in the township purchased a monthly 'hamper'. The hamper consists of staple groceries such as corn (millie) meal, cooking oil, flour and sugar. When asked about the hampers, the retailers interviewed would talk about festive gift hampers, but not the collection of staple goods everyone in the townships buys every month.

As the residential segregation in South Africa remains strong, the physical location of the grocery outlets is especially relevant. Even though the selection is limited, the supermarkets are one of the main sources of food for the urban poor in South Africa. Corporate interests are prioritised over health and nutrition factors of the urban poor: canned goods and starchy staples are what sell in and around townships so that is what is available in those outlets. This however leads to the question of whether township dwellers would buy fresh produce if it were financially and/or spatially more available to them (Weatherspoon *et al.* , 2015). The interviews in this study indicate that

yes, they would. When asked what they would eat if there were no constraints, most of them answered with some form of fresh produce.

In Bangkok where the second study was carried out, the urban poor hardly used supermarkets, and if they did it was not for food but other types of groceries such as hygiene products or school supplies. In Bangkok, the traditional sector is still the primary source of food for the urban poor. The market penetration of supermarkets therefore has an indirect effect, through the increasing presence of formal grocery retail, as well as general gentrification, the number of traditional outlets such as wet markets has dramatically decreased in Bangkok (Banwell *et al.* , 2013). This places additional spatial constraints on food access for the urban poor in these types of contexts. Many of those interviewed in Bangkok did not feel comfortable using supermarkets, and many stated that they do not trust the quality the same way they do at the wet market. They often used the same sellers and had established social connections with vendors, which are difficult if not impossible to achieve at formal supermarkets or convenience stores.

The situation regarding food security and access is less dire in Bangkok than it is in South Africa. Food culture in Thailand is world-renowned and this is apparent in the neighbourhoods visited for this study. The prevalence of street food stalls and micro retailers, along with the aversion to using modern supermarkets indicates a will and resilience to uphold the traditions of Thai food culture. However, the attitude and actions of the BMA and the speed of gentrification in Bangkok neighbourhoods is threatening the informal food sector and through that food security and access of poor urban citizens. Thailand is an emerging economy, where median incomes are rising. While the middle class is growing, so is the gap between the rich and the poor. The gentrification of neighbourhoods that used to be informal or classified as slums presents an enormous problem for those that used to or still inhabit those areas. The communities formed over generations of people living in those neighbourhoods are spread around the city, commutes to jobs become longer or in some cases completely unsustainable and access to basic needs such as food can suffer. Interviewees in two

of the neighbourhoods said that the possibility of eviction was always on their minds.

Street vending and wet markets not only improve food security for consumers, but also provide employment for otherwise marginalised people. Gentrification of the streets of Bangkok therefore has a multifaceted effect on the already marginalised urban poor, compromising both food security and income streams. The discussion surrounding street vending and who it is geared towards is interesting from the standpoint of the urban poor. It seems that the BMA and other stakeholders see street vending as a tourist attraction, rather than legitimate employment or food source. The bans on street vending are mandated based on e.g. traffic obstruction and food safety, which are not of concern to the respondents. In fact, there was high levels of distrust for supermarkets and the quality of food in them.

In both locations, the strategies of the large grocery chains regarding the urban poor vary significantly. Modern grocery retail has developed over the last few decades in both Thailand and South Africa (Battersby and Peyton, 2014; Kelly *et al.*, 2014). Initially it was international chains that penetrated the markets, but currently the biggest players in both countries are under local management. In South Africa, interviews were conducted with six experts in the retail sphere, whereas in Bangkok only consumers were interviewed. Therefore, no comparatives can be drawn between the retailers' perspectives.

In South Africa the poor demographics are seen as a lucrative market, and grocery chains have penetrated townships in varying degrees. The township in this study did not have a supermarket until a decade ago. However, the consumers interviewed were not pleased with the quality of the produce in the supermarkets, citing the lack of fresh produce as a major reason. It must however be acknowledged that the township in the study is rather small, meaning it likely has less significance from the corporate perspective. The retail interviews conducted in South Africa stated that the knowledge of particular shopping dynamics of the township dwellers is rather limited, indicating that market research

in this area could be improved upon to better respond to for example food security concerns.

The grocery shopping habits of the township dwellers were very systematic and diligent. Different items were purchased at different outlets due to price, availability and/or quality differences, or because of deals and discounts. Figure 4 portrays the different elements that play a role in shopping habits of the township dwellers. Price is an important factor, but location, quality and availability have significant relevance as well. The placement of the factors indicates the benefits of the different types of outlets. For example, spaza shops are conveniently located and well-priced, but lacking in quality of products. The large supermarkets in the nearby town were used by some of the slightly wealthier township dwellers. However, there was a vegetable hamper sold on a specific day monthly that almost everyone would make the trip to town for. Supermarkets were also used for non-food items, such as hygiene products and cleaning supplies. Specific outlets such as butcher shops were used, as it was possible to buy very small amounts of e.g. meat, which is an important attribute as many people did not have refrigerators. The supermarket sold mostly large quantities of meat, which was impossible for people to store. Among the respondents there were very few that purchased cooked food from vendors. One of the respondents had recently moved from a much larger township and claimed the restaurants and food vendors were much better in her old neighbourhood.

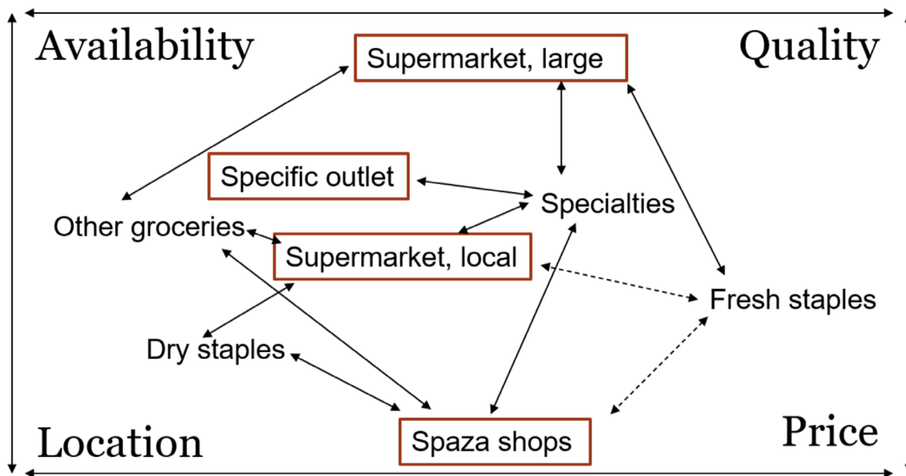

Figure 4 Grocery shopping dynamics for South African township

Comparing these dynamics with those in Bangkok, there are similarities as well as significant differences. The shopping dynamics are diligent, and people have their established routines, but in Bangkok the dynamics revolve around the IFS and micro retailers. In Figure 5 this is indicated with the amount of trust and shopping frequency in the different micro retailers. The more consumers trusted the outlet, the more frequently they would shop there. The figure portrays this with the placement of the outlet on the axis as well as the size of the lettering. The micro retailers located in the neighbourhoods were by far the most trusted and frequented of the different outlets. While the supermarket is an important food source in the township, in the Bangkok neighbourhoods, people were very wary of them and only used them once or twice a year. Cooking facilities were rare to have in people's dwellings, as were refrigerators. People who lived alone rarely cooked for themselves, only if there was a larger family present cooking was favoured. Even then, the rice was purchased in individual portions from a vendor. The importance of the micro retailers is explored more thoroughly in the following section.

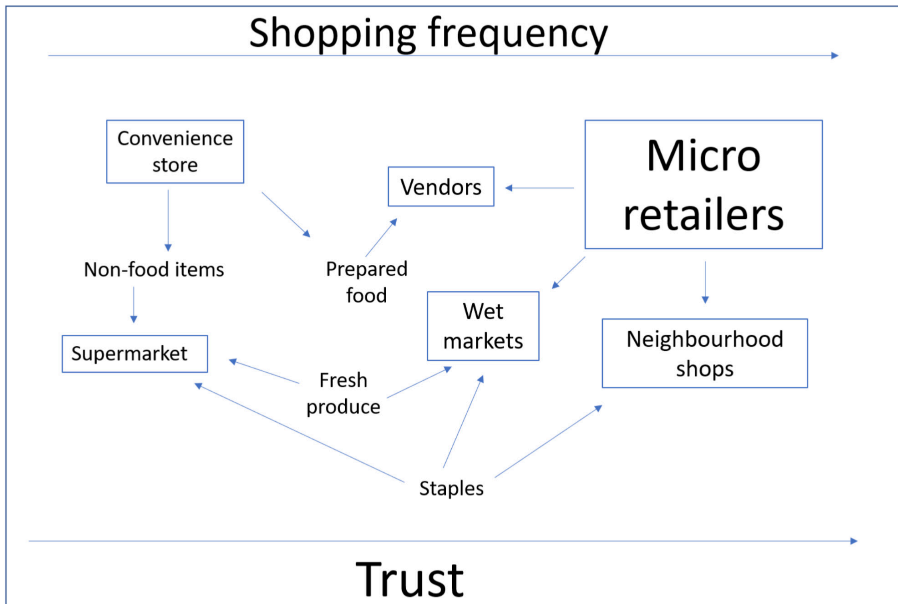

Figure 5 Bangkok urban poor grocery shopping dynamics

5.2 RQ2: Importance of micro retailers and the informal food sector

In both contexts, the informal sector is a relevant element in food security. In South Africa the spaza shops are a principal source of food alongside formal supermarkets. What is purchased in either outlet varies significantly, as discussed in paper 2. The spaza shops are primarily used to purchase a monthly 'hamper', a combination of staple groceries, as well as small daily necessities such as cold drinks, paraffin, milk, and bread. As discussed in paper 2, the benefit of the spaza shops is their location within the community, close to where people live. The township where this study was conducted in has its own supermarket, but it is located on the outskirts of the neighbourhood and only some residents have easy spatial access to it. The township is also located on a hill, with the furthest dwellings quite a climb from the supermarket.

The spaza shops sprinkled around the township therefore provide access to basic groceries at a reasonable spatial distance. In terms of financial access, the price range at the spaza shops varied among outlets, as they are all individual businesses. What garnered some attention was the dominance of foreign owners of the spazas. Many of them were run by e.g. Somalians, and this was met with some disdain from the interviewees. A local spaza shop owner interviewed for this study explained that the foreign owners formed cooperatives, which allowed them to work with economies of scale in terms of ordering and transport of goods. The interviewed owner worked by herself and knew that her prices were higher than some of the other spaza shops in the area. However, the quality of the goods in many of the spaza shops was less than par, which was thought to be a reason for the cheap prices. Many interviewees, including the spaza owner, had purchased expired or otherwise faulty goods from spazas, which could be potential health hazards. This was not reason enough to completely boycott the spaza shops, as the convenience of their location as well as the lower prices were difficult to pass by.

In Bangkok the informal or traditional food sector is a fundamental part of the urban fabric, not just in terms of food security but culturally and historically as well. With accolades such as ‘street food capital of the world’, the focus is however sometimes shifted towards tourists and those who rely on the traditional food sector are marginalised (Carrillo-Rodriguez and Reed, 2018). The interviews revealed that most of the respondents rely on the IFS for their everyday grocery needs, and that buying prepared food is not considered a treat for special occasions but an efficient way to eat. Many of the respondents formed social ties with the vendors and were able to purchase with credit if having financial issues, or even have the vendors assist with diet related medical issues.

Prevalence of the spaza shops in the township and food vendors in Bangkok strengthen the notion that food deserts must be re-conceptualised for a Global South context (Battersby and Crush, 2014). The supermarket-centred notion of food retail might be gaining ground in both South Africa and Thailand, but the relevance of the IFS remains

significant. Analysing through the pillars of food security in Figure 3 (Fernie and Grant, 2008; FAO, 2020), the IFS responds to availability, access and utilisation in ways that adhere better to the dynamics of the urban poor, as can be seen in Figure 6. The decentralised strategy and ability for rapid response for demand provide an overview of the type of dynamics urban poor neighbourhoods require. In terms of availability, the prevalence of different outlets selling small quantities of specific items, as well as prepared dishes is an integral part of ensuring food security. Incomes for the urban poor can be irregular and storing space nearly non-existent, so the suburban model of a bigger shop once a week (Fernie and Grant, 2008) is not an option. Therefore, access to food is provided through small quantities that can be cooked or eaten instantly.

From an SCM perspective, the IFS is challenging as the neighbourhoods are difficult to access with delivery vehicles and there are e.g. security issues. In the hybrid model of Figure 6, the availability pillar is approached through prevalence of outlets and on-shelf availability. Prevalence of outlets is the strength of the IFS, but on-shelf availability can be unpredictable, especially for fresh produce. The cooperation of the foreign spaza owners is an example of how SCM can be used to improve business, even if one is working with competing entrepreneurs. The use of a super middleman could be beneficial for the spazas and other micro retailers, whereby they could streamline their business processes, offer better products (Hingley, 2005). One of the social workers in their interview applauded the business acumen of the foreign spaza owners, saying there is a lot to learn from them despite the negative connotations. Food prices, which are a major access constraint for many of the interviewees could be lowered further with consolidation of deliveries.

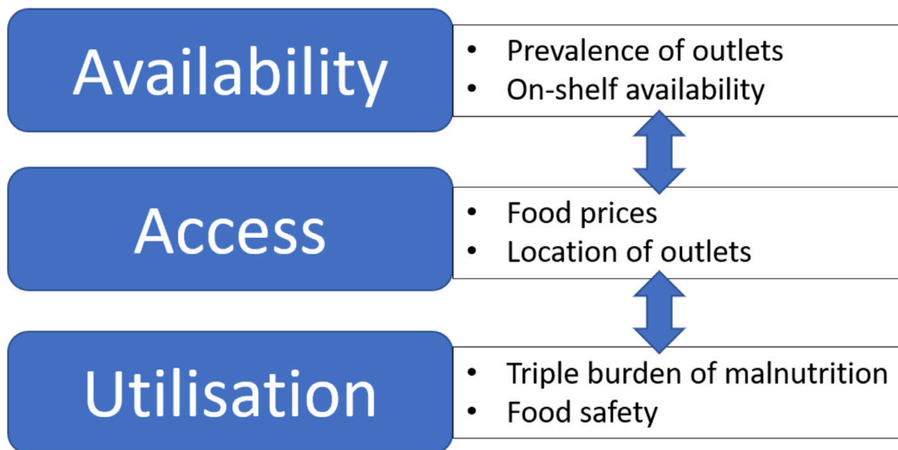

Figure 6 Hybrid model of urban food security pillars

Locating outlets around the neighbourhood where people live and work, as well as near transport hubs in an important addition to improving access (Battersby and Crush, 2014). However, in accordance with the utilization pillar of food security, the quality of the food must also be a factor. The supermarkets marketed for the poorer demographic in South Africa generally have a much less diverse selection of produce on offer, which is a relevant factor in the triple burden of malnutrition (Gómez and Ricketts, 2013). In Bangkok the rising prices of meat and vegetables is becoming a prohibitive factor for the urban poor. For example, vendors supplement the decreasing amounts of protein in their dishes with rice, so customers can feel satiated. The nutritional value of the dish is however significantly lowered. Food safety is considered a concern with the IFS, as it is for the large part unregulated. However, it is unclear whether the food safety standards significantly improve with the transition to formal retail and whether food safety is a 'real problem or a perceived problem' (Wertheim-Heck *et al.* , 2019, p. 4) Much like framing food deserts through absence of supermarkets, the private sector and gentrification agendas benefit from challenging the food safety of traditional outlets. Infrastructure and regulatory improvements need to come from governance, but pressure from

consumers and supply chain actors, such as retailers and distribution operators can influence governance at different levels. Formal retail holds more consolidated power than micro retailers or consumers, leading to their agendas being prioritised.

5.3 RQ3: Sustainable supply chain and retail management for food security

The modernization of the grocery retail scene in South Africa and Thailand, and other contexts like them, has been a subject of interest for some time now. There are differing perspectives on the matter. On the one hand modern supermarkets are thought to bring cheaper prices and a more diverse product base to consumers (Reardon and Hopkins, 2006). On the other hand, the increasing penetration of GLR in emerging markets where the food retail scene has revolved around independent outlets and markets is marginalising the urban poor (Battersby and Peyton, 2014). The findings in the empirical essays 2 and 3 of this thesis would indicate that the latter perspective is a valid one in both South Africa and Bangkok. Both contexts have a rapidly modernising food retail scene, where the urban poor are still reliant on a more traditional mode of grocery shopping (Battersby and Peyton, 2014; Kelly *et al.* , 2014).

The public health issues resulting from urban food security in South Africa are cause a for concern (Battersby and McLachlan, 2013). Therefore, examining it as a humanitarian issue could present some useful insights. Access to food for the urban poor is mostly provided by the commercial sector, either formal or informal. As Day *et al.* (2012) suggest, applying elements from HSCM into commercial context could help it to adapt to more dynamic environments. This is usually to increase market reach and increase their profits. As the grocery supply chain and specifically retail sector provides access to a basic need, food, its emphasis could partially shift from purely profit-seeking to preventing loss of life or improving the quality of life. Järvensivu *et al.* (2018) suggest that international trade and the commercial sector should be a more prominent component in food security, rather than

only serving the commodity market. A crucial step to achieving this would be to take the dynamics of the urban poor into consideration when building a food retail network. Both empirical contexts in this study indicate that the urban poor remain marginalised within the formal grocery retail sphere. In South Africa the urban poor are recognised as a lucrative new market, but knowledge of their grocery shopping habits is scarce, as explored more thoroughly in essay 2. Based on the interviews conducted in Bangkok (essay 3), the urban poor do not utilise formal retail outlets much, which indicates that retail business models do not take them into consideration.

The BoP literature aims to lift people out of poverty through innovation (Prahalad *et al.* , 2012) and consequently making them consumers that contribute to corporate profits. This was the view expressed by the retailers interviewed, that by familiarising with the urban poor demographic in South Africa, one could run a very smart business.. There has been some progress in that regard in recent years. For example, the township where this study was conducted did not have a supermarket until about a decade ago. However, the supermarket represents the low-end segment of the chain, with a poor selection of fresh produce. SCM research and application is a way to examine urban metabolisms in practice. The food supply chain, particularly the consumer interface of it is still subject to power imbalances, in terms of the multidimensionality of food access. While efforts are being made to capitalise on the urban poor as a market, their dynamics in terms of health and living standards are still unknown along the higher corporate echelons.. In both contexts explored in this study, the urban poor represent a significant demographic and market base, which from one perspective could benefit from a BoP approach, which reduces poverty to economic factors. In Bangkok particularly there is an active campaign to disenfranchise the food sources of the urban poor, as they are claimed to disrupt urban spaces and have safety issues (Nirathron and Yasmeen, 2019). These claims are examples of how private sector agendas are prioritised over the dynamics of urban poor needs, while simultaneously attempting to capitalise on the market.

The two empirical contexts are interesting and relevant in terms of urban food security research. Geographically, historically, and societally they are vastly different, but both can be considered emerging economies with high levels of inequality. This is particularly visible with the residential segregation and prevalence of informal settlements. In terms of food security, both locations exhibit a reliance on the IFS. However, in Bangkok the IFS is the main, if not only, source of food for most respondents whereas in South Africa the formal supermarkets contribute in a significant way to food access. The culture of food vendors selling prepared food was a major contributor in Bangkok, providing inexpensive meals that can be eaten right away. Cooking was more common among families, where multiple people ate together. In South Africa everyone cooked daily.

Rising food prices were a prohibiting factor to healthy eating in both places, particularly for fresh produce. In Bangkok fresh produce was available to buy from vendors and markets, and included in prepared dishes, but people have had to reduce their intake due to financial constraints. In South Africa spatial access is also a problem in terms of fresh produce, as the outlets easily reachable from the township had poor selections of vegetable and meat. Meat was often sold in large frozen portions, which were impossible for people to store as many did not have electricity or the space. The fresh produce that was available were those with long shelf life, such as potatoes, which is an additional starchy carbohydrate. In both locations, financial and spatial access to fresh produce and more nutritious food in addition to inexpensive starchy staples is needed. The business model of the IFS, with small outlets located around the neighbourhoods, is an effective one and should be the starting point of the urban food security conversation.

This type of inter-context research highlights the heterogeneous nature of urban food security, and how one-size-fits-all solutions perpetrated by GLRs are not a sustainable solution. It is imperative to consider the underlying societal factors within each context, as demonstrated in this study. In South Africa, the urban poor are seen as a lucrative market due to the size of the population, and efforts have been made

from supermarket chains to penetrate that market, with solutions that cater to that demographic. In Bangkok the urban poor residents do not utilise supermarkets the same way that their counterparts in South Africa do. In both locations however the trend is going the way of formalising grocery retail, framed by assumptions regarding insufficient financial or spatial access and how increased supermarket presence is the solution.

While the two cases may seem worlds apart, there are several results that can be synthesized from the two studies. First, the assumption that access to a supermarket automatically improves food security is a reductionist perspective stemming from a private sector-led agenda originating in the Global North. The evidence from both locations, as well as the literature, indicates that supermarkets are but one source of groceries, and can in fact have harmful consequences in terms of nutrition. Particularly interviewees in Bangkok were uncomfortable using supermarkets and did not trust them as much as micro retailers and other traditional outlets. In South Africa, interviewees used the supermarket but in a very specific manner, with daily necessities purchased at more conveniently located spaza shops. Therefore, urban food security needs to be addressed from the bottom up, starting with the micro retailers and their business models.

Second, assuming that poverty can be addressed through financial indicators only ignores the multidimensionality of poverty, and this has significant implications for food security. In terms of health, the type of food one has financial and spatial access to is not insignificant. The diet shift in the Global South is veering towards increased amounts of processed foods, and South Africa is particularly vulnerable to the TBM. The traditional diet in Bangkok and the surrounding regions is diverse and plentiful in vegetables and healthy proteins, but due to the closure of traditional markets and the rising prices of fresh produce this is changing. Vendors would replace fresh produce with rice in their dishes in order for the customers to be able to afford them, demonstrating the importance of starchy staples. In South Africa the dietician interviewed emphasized the significance of starchy staples

such as millie meal and rice, but also the detriments of those making up most of the diet in townships. This exposes people to micronutrient deficiencies and obesity. People were therefore not going hungry per se, but their nutritional health was at risk. The living standards dimension of poverty also has an impact on food security, as the infrastructure for cooking and storing food is highly significant. While buying produce in bulk might seem economically sound, many people do not have the space or hygienic opportunities to store them. Micro and independent retailers respond better to these types of dynamics, offering smaller amounts of foods that suffice for one meal as well as ready cooked rice and other prepared meals for those with no proper kitchen.

6 CONCLUSIONS

6.1 Summary of thesis

Urban food security is an increasingly relevant phenomenon in a wide variety of contexts. In cities, food is generally readily available through numerous retail outlets, which has contributed to the dearth of data on urban food security; the issue has been considered predominately rural and resulting from a fundamental lack of food. The urban poor however suffer more from spatial or financial access constraints rather than an absence of groceries.

The focus of this thesis is on the Global South, where multidimensional urban poverty is a significant underlying factor in food insecurity. Therefore, examining the phenomenon must be approached from a nuanced and interdisciplinary perspective, taking into consideration the socio-economic processes that make up the urban environment. Empirical work was carried out in two very different cultural and geographical contexts, South Africa and Bangkok, Thailand.

The IFS is an important element in the urban poor food dynamic. Micro retailers such as independent shops and vendors of prepared food or ingredients are the backbone of urban poor neighbourhoods' food security, providing access to groceries where the formal retail chains do not cater. While the urban poor are a large market, their buying power is considered insufficient for profit-oriented supermarket chains, leaving many neighbourhoods marginalised. In a Global South context it has not been common to refer to these areas as food deserts, because the Northern definition revolves around an absence of retail outlets selling fresh produce and nutritious food, but due to the prevalence of micro retailers, it does not really apply. A food desert in the Global South derives from structural inequalities in society, such as residential segregation, poverty and marginalisation of communities which cannot be solved with a supermarket.

UPE allows analysis of structures and processes that contribute to

inequalities in urban areas. The spatialisation of the physical and social factors that are encompassed in food security highlight the internal differences within cities, i.e. why some areas and the people living in them have more access constraints than others. Aspects such as residential segregation and the historical and political flows behind them are an example of the underlying factors that must be addressed to improve social issues such as urban poverty and food security.

Profit oriented GLRs penetrating the grocery markets in the Global North have further marginalised the urban poor by forcing small independent neighbourhood shops to close and be replaced by large supermarkets on the edge of town. The IFS and its parallel metabolisms present a different dynamic and opportunities in the Global South, but the effects of 'supermarketisation' can still be seen. Outlets located near poor urban neighbourhoods often have a less diverse selection of produce, leading to the triple burden of malnutrition, i.e. under nourishment, micronutrient deficiencies and obesity. The presence of GLRs has also exposed urban residents to processed and other food low in nutrients, which were previously not a part of their diet. Rather than focusing on the urban poor as a potential profit source, the food supply chain could be organised in a more inclusive way, which considers the dynamics of the different neighbourhoods and demographics rather than going in with a one-size-fits-all solution. Harnessing the business model of the IFS, with independent outlets located where people actually live and work is a way to improve food access and nutrition.

6.2 Theoretical contributions

Overall, this thesis contributes to urban food security theory and research by combining a UPE approach with the practicalities of SCM to achieve better explanation and understanding of dynamics and factors affecting urban food security. The urban metabolic flows examined in UPE provide insight into the underlying factors behind access constraints, going beyond financial and spatial constraints. Factors such as residential segregation according to social status or race and the supermarkets chains' reluctance in catering to these areas

are better understood through UPE analysis and can therefore be implemented into food SCM and retail research.

Whether or not a formal centralised supermarket is the best solution for an urban poor neighbourhood is questioned through the examination of shopping dynamics. The implementation of the food desert concept into Global South contexts in called into question, as this discourse revolves around private sector solutions rather than regarding the multidimensionality of urban poverty and the dynamics that this translates into. Small, conveniently located outlets and frequent visits for small quantities of goods is the dominating shopping tactic. These findings support the notion that a one-size-fits-all approach involving supermarkets is unsustainable for urban food security and the dynamics of different demographics must be taken into consideration when designing a retail strategy. Hybrid retail strategies and some examples to achieve this objective have been discussed in preceding chapters, however specific types will depend upon context and situation.

Urban food security is a complex subject with many dimensions, therefore interdisciplinary research is an appropriate approach, and this thesis contributes to SSCM and development studies research by utilising such an approach and demonstrating its veracity. Previous research in urban food security has predominately been done in the fields of development studies and urban/human geography. Because urban dwellers are dependent on the market for their nourishment, it is important to include a retail supply chain perspective as well. SSCM, with its holistic focus on social, environmental, and economic factors is an appropriate stream to include in urban food security research. For development studies, it provides an avenue into the practicalities of urban food retail, and the ways the food supply chain contributes to access constraints.

Finally, this thesis contributes theoretically to the SSCM stream through an empirical study on social elements of sustainability, which have not been researched as extensively as the environmental perspectives. Furthermore, the Global South is also underrepresented in SSCM

literature, so incorporating the development studies perspective contributes to the endeavour to make the stream more holistic and inclusive.

Incorporating elements from HSCM into urban food security research offers an opportunity to explore urban food retail from a 'lives saved' rather than 'profit made' perspective. As urban food security contributes to public health matters, it has consequences beyond increased market share for GLRs. Treating it as a slow-onset humanitarian crisis with implications for governance as well as for retail supply chains is a contribution and presents a platform for future research.

6.3 Practical and social implications

The data in this study indicates that retail chains are not aware of the shopping dynamics of the urban poor and are therefore unable to respond to their specific needs. Empirical studies done in poor neighbourhoods and informal settlements inform policy makers and retailers of the shortcomings of the current retail strategies with regards to the urban poor. The agricultural focus on food security studies ignores the retail perspective, whereas consumption studies only consider nutritional information rather than how food is accessed.

This study also presents a framework through which supply chains can be analysed and understood using themes from development studies, bringing a more societal and holistic perspective to SCM issues. Essay 2 explores issues related to nutritional deficiencies stemming from a marginalising retail strategy. Increasing knowledge regarding healthier diets and providing market-based access to fresh produce in quantities and prices accessible to township dwellers could fight TBM and ease the public health concerns arising from poor diets.

Essay 3 highlights the continuing importance of micro retailers, and the detriments of limiting their functions through gentrification and marginalising policies. Centralising grocery shopping into suburban locations which are difficult to reach is an unsustainable solution for

urban poor neighbourhoods, where the dynamic remains to shop at local outlets and restaurants. Improving policies for micro retailers to function, for example providing them with easier access to permits and spaces would enhance their safety and accessibility for those who use them on a regular basis. Acknowledging their role not just in food distribution and provision but in urban culture as well is important in maintaining their crucial functions.

This thesis also contributes to the SDGs in several ways. First, the Zero Hunger goal is unachievable if urban populations are underrepresented and food security is considered mostly a productivity and agricultural matter. Urbanisation is predicted to keep increasing for the next three decades, further exacerbating the need to understand and improve distribution networks and food retail. Second, the infrastructure and underlying social concerns that are pertinent in terms of Liveable Cities are relevant factors in urban food security as well. Aspects such as personal safety, transport links and access to electricity and running water came up in interviews often and are crucial in terms of both Liveable Cities and food security. This highlights the need for inter-goal research, as many development issues concern multiple goals.

6.4 Limitations and suggestions for future research

The limitations of this study include its exploratory nature and the rather limited data sets. As urban food security is a relatively new subject, especially in the SCM research stream, approaching it from an inductive and exploratory perspective is warranted. This limits the generalisability of the results however this was not an expected outcome of the research from the beginning. The goal is to build upon existing similar research and increase knowledge on urban food security from both SCM and development studies perspectives.

The data was collected solely by one researcher with limited resources; therefore, the data sets are small. In South Africa, it was only possible within the time frame and other resources available to gather data from one township. In Bangkok the language barrier was a prohibiting

factor, therefore the researcher was dependent on the translators and their schedules and availabilities. These issues limit the geographical and contextual scope of the research and for comparative purposes more contexts would be ideal.

Future research in this subject should include exploring more geographical contexts in both the Global North and South. The prevalence of food deserts is increasing in the Global North, and dynamics from neighbourhoods such as South African townships can be useful in determining potential solutions. Further research in different Global South contexts, such as Latin America or South Asia, could provide altogether different solutions which could then be consolidated into policies worldwide. As well, the COVID-19 pandemic has severely affected food security. This data was collected pre-pandemic, so it was not possible to draw conclusions from the data regarding this, but especially informal traders and those without social security and other such safety nets have been particularly devastated by the pandemic.

Lastly, this thesis focussed on the retail end of the supply chain, with only limited references to the post-farm segment. In terms of retail dynamics in poor urban neighbourhoods, further research on procurement strategies of micro retailers would be a valuable addition to the literature regarding urban food security as it could provide insight into supply issues and how for example fresh produce could be more accessible to urban poor residents, especially in South African townships.

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APPENDIX 1

Consumer Interview Guide (South Africa & Thailand)

Basic info of interviewees

- Name (only for reference purposes, will not be published)
- Size of household (number of adults and children):
- Primary source of income (total household):
- Proportion of income spent on food (estimate):
- How long have you been living in this neighbourhood?

NOTE: These questions are meant as a guide to the conversation related to food security and access.

- How do you primarily access food?
- What is your biggest constraint in buying food? Is it financial, food is too expensive, or is it more spatial, there are no outlets located conveniently for you?
- What is your preferred type of food retail outlet (supermarket, micro retailer, informal food sector etc. ?)
- How often do you purchase food? Small quantities daily or stocking up?
- What are your household staples?
- Do you purchase food at different intervals from different types of outlets, i.e. do you visit the IFS daily and supermarkets weekly?

• In the past have there been more or less food retail outlets where you felt you could access food?

• Do you normally buy more prepared food or ingredients for cooking? What type of places do you buy the prepared food from?

• In case of purchasing from micro retailers, do you have the opportunity to utilize a credit system of some kind?

• If using these credit systems with micro retailers, do you feel like it improves your food security?

• Do you practice urban agriculture either on your own or as part of a programme or collective? Does that affect your food security?

• If you have lived in a more rural setting, how does your food security in the township compare to the countryside?

• What would be your ideal way of buying food? And what would you eat if you could eat whatever you wanted?

APPENDIX 2

Retailer & Social Worker Interview Guides (South Africa)

Retailers

- How long have you been working in the grocery industry?

- How do you think the grocery retail scene in South Africa is changing?

- Who do you think it is geared towards?

- In terms of urban food security, what do you see as the supermarkets' (or formal food retail in general) role?

- What are the retail plans concerning lower income populations/ townships etc.?

- How does your company engage with/cater to the lower income populations?

- Looking at your website, there is a lot of emphasis on community development. What can you tell me about that?

- What is your perception of the grocery shopping habits of the lower income populations?

- Brand/store loyalty

- Price comparing

- Role of distance and transport links

- Do you know of any surveys or research being done on the shopping habits of lower income populations? Does [Shoprite]

do them?

• Do you see the spaza shop culture as competition or a threat? Or do you see opportunities in that form of retail i.e. small shops selling necessities?

• What do you think is the role of large supermarket chains in urban food insecurity?

• What can you tell me about the hampers/combos?

• On what basis is it decided what goes into them? I.e. which products, which brands etc.?

• What kind of nutritional analysis is done on the hampers?

• What do you think is the role of the retailer in shaping what the hampers consist of? For example, offering healthier alternatives in the hamper

Spaza shop

• How long have you had the business?

• How many people do you employ?

• Where do you get your stock?

• What do you think is your specific edge compared to the supermarkets?

• Who are your main customers?

• Do you have regular customers?

- What do people buy from you?

- How much do people spend here on average?
- Do you see the supermarkets as competition?

- Can you describe your (potential) business relationship with the supermarket?

- How easy is it to set up a spaza shop business?

- What can you tell me about the hampers?

- How do you decide what you put in the hampers?

- Do you have some kind of corporate connection when putting together the hampers?

- Do you put them together yourself? Do you listen to customer wishes or requests?

Social workers

- General background on the beneficiaries: ages, basic family history, HIV, sexual violence etc.

- General overview of township

    - "Different" neighbourhoods within the community (e.g. financial differences)

    - Current struggles of the residents

    - Racial profile

• In your point of view, what are the biggest obstacles to a healthy diet for people in the township?

• What other kinds of obstacles do people here face?
• What are in your opinion the biggest obstacles people face in terms of finding a job?

• What is the role of charities/orgs such as this one in townships in terms of food security and poverty?

• This phenomenon of men using all the money a household earns for drugs and alcohol, how common is that? What do you think its effects are on food insecurity?

• Do you provide nutritional training? What kinds of things do you discuss?

• In terms of the food parcels you hand out, what is the contents?

• How often does it change, or does it change at all?

• How much say do you have in what goes into them? Or do the donors dictate?

• How does your parcel compare to the hampers that people buy? Similar contents?

• What is your view on the nutritional value of the hampers?

• Do you think there are opportunities to improve the nutritional status of people in townships by improving the nutritional status of the hampers/parcels?

• Would people still buy them if they included healthier alternatives?

APPENDIX 3

Essay 1

Towards inclusive urban food supply chains

This essay has been published as chapter 1 of Food Supply Chains in *Cities - Modern Tools for Circularity and Sustainability* (eds. Aktas and Bourlakis, 2020).

Abstract (500 words max)

Background and Aim: Food security is a growing concern in cities all over the world, as the majority of the global population resides in cities. Access and stability are factors that play a large role in urban food security. This chapter examines the linkages between food supply chain management and urban food security, particularly among marginalized or poor citizens.

Research Design and Methods: This paper is a literature review on urban food security across three different disciplines in the social sciences: supply chain management, urban geography, and development studies. Materials sourced are primarily academic articles; however, reports from relevant organisations such as the United Nations are also included in this review.

Findings: Urban food insecurity exists in cities worldwide. While it is difficult to pinpoint a single cause for food insecurity, a persistent theme throughout the extant literature is urban poverty. The findings conclude with proposed research suggestions to further investigate this persistent theme as well as other issues concerning urban food insecurity, including the reality that specific urban contexts play a significant role in the underlying factors leading to food insecurity.

Research Limitations: As a literature review, the chapter does not offer empirical evidence to support its arguments. Inclusion of articles

and search terms used also limit the sources.

Theoretical Contribution: Urban food security research suffers from a lack of interdisciplinary data and research. This chapter brings supply chain management (SCM) in diverse contexts and food retail into the discourse and uses urban metabolic flows and urban political ecology (UPE) in parallel with SCM.

Practical impact: Businesses, policy and planning benefit from interdisciplinary research on urban food insecurity, particularly regarding the factors underlying it.

Keywords: food, urban, food security, supply chains, sustainability

Introduction

Urban food insecurity is a complex issue with multiple levels and contexts. The FAO (2009) defines food security as “a situation that exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”. The concept is further divided into four pillars: availability, access, utilisation and stability. Urban food security is particularly concerned with access to food rather than its fundamental availability. As urbanites are generally dependent on the market for food, the stability of the market in terms of e.g. prices is also an important consideration. As such, food insecurity affects the urban poor disproportionally, creating a challenge for food supply chains.

This chapter uses an interdisciplinary perspective to explore food security in an urban context. Through a literature review of three fields in the social sciences – supply chain management (SCM), urban geography, and development studies – a holistic point of view of the particularities of urban contexts and how some of them result in food insecurity is presented. A majority of the previous research in urban food insecurity has been done in the fields of urban geography and

development studies. SCM provides an appropriate additional lens into the flows of food that are brought into the city, and the powers that govern them, even if the articles do not explicitly discuss food security per se. Sustainable SCM (SSCM) brings insights into global supply chains functioning in different societies and contexts. An inclusive supply chain serves all strata of society, including those disproportionally affected by food insecurity. In this chapter, marginalized neighbourhoods and households, urban poverty, and informality are analysed as underlying factors behind urban food insecurity, highlighting stable access to food over availability concerns. The lens of urban political ecology (UPE) is used to tie the social, environmental, and economic flows together into a coherent urban reality.

The chapter is organized in the following manner: the next section briefly presents the review method, followed by the main themes that emerge from the analysis. It then moves on to a discussion section and finishes with a conclusion section that draws the chapter together and suggests future empirical research avenues in urban food insecurity.

Review Method

Literature reviews are an essential part of academic research and constitute what empirical work is derived from to locate its relevance in the discipline. However, they can also be a self-standing academic contribution that produces an overview of a discipline and synthesis of a potentially scattered collection of literature (Seuring & Gold, 2012). Tranfield, Denyer, & Smart (2003) present two aims for literature reviews: first, they map the discipline being researched through existing literature to gain a holistic picture of it. Second, they identify gaps in the body of knowledge that need to be addressed for the discipline to develop.

The methodology for our paper draws mainly from the principles of a systematic literature review (SLR) (Tranfield *et al.* , 2003) and content analysis (Seuring & Gold, 2012), forming a critical review of the extant literature on supply chain management (SCM), urban/human

geography, and development/food studies. The SLR approach is an efficient choice in performing initial searches within existing research and selecting the most relevant articles to be included (Colicchia & Strozzi, 2012). The content analysis method for literature reviews then provides a more robust technique of categorising and evaluating the collected material through interpretation of the underlying arguments presented in the literature (Seuring & Gold, 2012). This combination was inspired by the methodology presented by Colicchia & Strozzi (2012), which used an SLR with citation network analysis. Content analysis was chosen for this review as the research areas are interdisciplinary and as such cross-disciplinary citations would be lacking. The review methodology is presented in Figure 1.

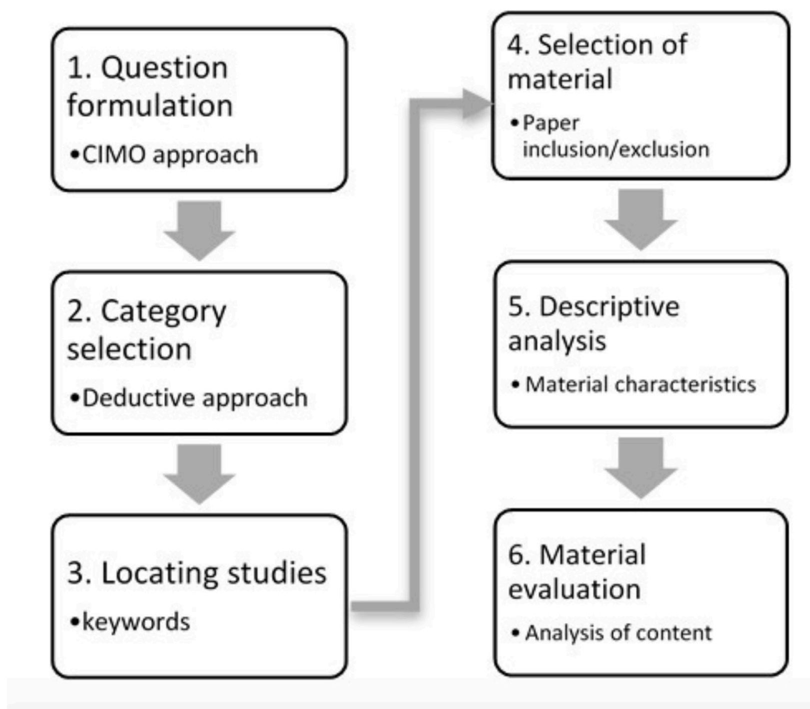

Figure 1 Review methodology (adapted from Colicchia & Strozzi, 2012)

An SLR requires certain criteria to be set prior to any literature search to determine what is included in the review (Denyer & Tranfield, 2009). This is in reference to transparency, which is the first of four core principles for SLRs in management and organisation studies proposed by Denyer & Tranfield (2009). First, the author must be clear and concise about the processes used in the review, as well as about any prior knowledge regarding the literature in question. The second principle, *inclusivity* refers to the range of studies in the review, while the *explanatory* principle synthesises the literature into a coherent whole. The *heuristic* nature of the review points to practical solutions that derive from the SLR. Together these four pillars make the SLR an objective overview of extant research and eliminate bias and error (Colicchia & Strozzi, 2012; Denyer & Tranfield, 2009). Content analysis on the other hand delivers two layers of interpretation: first through a statistical and superficial analysis of the literature followed by delving thoroughly into the underlying ideas of the research (Seuring & Gold, 2012).

Applying the methodology presented in Figure 1 to the context of this review, the research objectives of this chapter are first formulated using the Context, Intervention, Mechanisms, and Outcome (CIMO) approach (Denyer & Tranfield, 2009). The context is the relationship between urban food security and modern food supply chains and their management (Battersby & Peyton, 2014; Lorentz, Kittipanya-Ngam, & Singh Srai, 2013; Silvestre, 2015). Increased urbanization and consequently urban poverty are the underlying phenomena that frame the context of the study (intervention). Urban dwellers are generally completely dependent on the market for food, so the food supply chain becomes an important *mechanism* in the lives of urban citizens. Issues such as the location of grocery retailers and the informal food sector are examined in this research as well. The outcome of the research is comprehensive insight into how supply chain management can be harnessed into providing solutions for urban food insecurity.

Materials were collected through a keyword search as well as through a snowballing technique of following up on references. Keywords

included "food security", "urban", "supply chain" and "sustainable" and combinations thereof. Searches were carried out in the Scopus database. A deductive approach was used when determining the categories for the literature, i.e. the disciplines of SCM, urban geography and development studies were selected before the search was conducted. Delimiting the search area was an imperative step to take prior to any searches, as food security can be approached from a variety of different perspectives, such as nutritional science or public health. The unit of analysis was defined as one English language article, report or book chapter. Reports from organizations such as the United Nations contain relevant data for this type of subject, therefore the review is not limited to academic publications.

All in all, 61 pieces of literature were included in the review: 52 academic articles and 9 from other sources such as book chapters and reports. Publications were read carefully to surmise their relevance to the review. Division between the three main disciplines was fairly equal, although development studies had both the most articles in total (21) and the most cited journal (World Development, with five articles). Table 1 presents the journals included in the SLR. The division among the disciplines, presented in Figure 2, was made according to the source journal.

Table 1 List of journals included

Journal Title	#	CiteScore	SNIP
World Development	5	3.92	2.542
Geoforum	4	3.09	1.543
International Journal of Retail & Distribution Management	4	2.52	1.263
Food Security	3	2.66	1.569
Global Food Security	3	4.72	2.151
International Journal of Physical Distribution & Logistics Management	3	4.15	1.5
International Journal of Production Economics	3	5.42	2.386

Urban Forum	3	1.51	1
Applied Geography	2	3.75	1.569
Food Policy	2	4.53	2.453
Supply Chain Management: An International Journal	2	5.45	1.793
Antipode	1	3.88	2.412
Area	1	2.09	0.949
British Journal of Management	1	3.23	1.818
Capitalism Nature Socialism	1	0.49	0.274
Development Policy Review	1	1.47	1.177
Development Southern Africa	1	0.8	0.931
Environment and Urbanization	1	2.54	1.582
Geography compass	1	2.74	1.336
Habitat International	1	3.37	1.704
International Business Review	1	3.2	1.61
Journal of Business Ethics	1	2.91	1.639
Journal of Economic Geography	1	4.14	2.634
Journal of Industrial Ecology	1	3.93	1.439
Journal of Supply Chain Management	1	7.04	2.934
Science as Culture	1	1.38	0.841
Sociological Quarterly	1	1.68	1.194
Theory, Culture & Society	1	2.17	1.73
Urban Studies	1	2.91	1.826
Total number of articles	52		

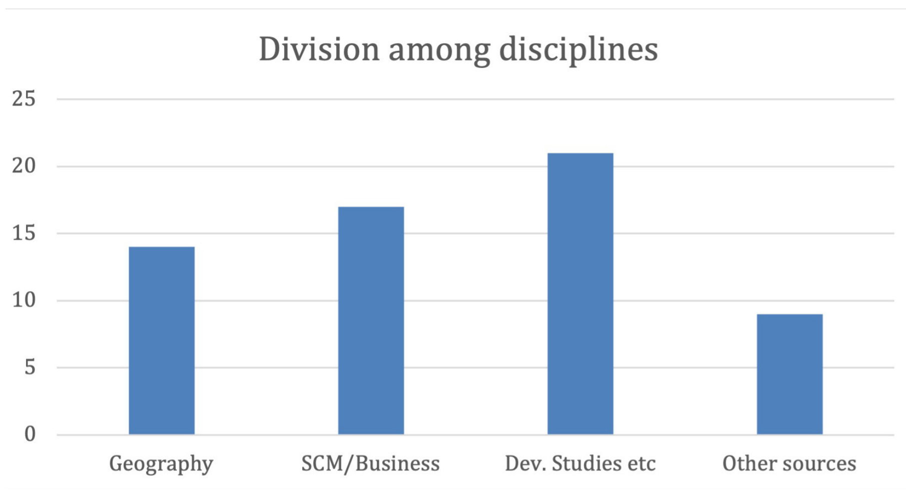

Figure 2 Division among disciplines

The material was limited to the 21st century, save two articles from the latter half of the 1990s. A majority of the material is from the past five years, with a peak in 2013-14. Descriptive statistics are the first layer of content analysis. The types of journals and the timeline of the articles provide important insight on the materials, and the trends that emerge. Figure 3 depicts the timeline of the selected publications.

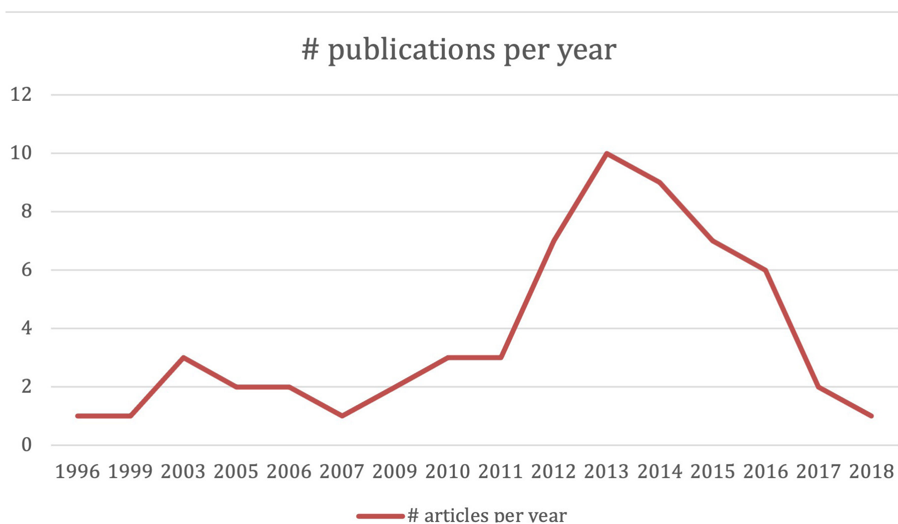

Figure 3 Timeline of publications included

In content analysis, material evaluation is the process of reviewing the literature collected, which begins in the next section with the main themes of urban food insecurity that emerged from the literature. The underlying layers of the material were always analysed with the category in mind, i.e. whether this article appeared in an SCM journal or development studies. It was, however, noted that development studies and urban geography overlapped considerably, and SCM stood out with different themes, such as urban logistics (Lagorio, Pinto, & Golini, 2016) and challenging markets (Amine & Tanfous, 2012). This chapter brings new approaches into SCM, the recipient discipline, from the referent fields of development studies and urban geography. Five subthemes were recognised from the literature that fed into the overarching theme of urban food insecurity:

- Rural bias
- Urban political ecology
- Urban poverty
- SCM in diverse contexts
- Urban food retail

The following section discusses the findings from the literature, with the subsections further indicating a subtheme and how it relates to urban food insecurity.

Urban food insecurity

As an outcome of the content analysis, several main themes emerge from the literature. These are a rural bias, which has dominated the food security conversation in the past; urban political ecology, acting as a theoretical framework for the analysis; urban poverty and food supply chain management, as well as urban food retail.

Rural bias

Food security is defined to include all people having physical, social and economic access to sufficient, safe and nutritious food to maintain

a healthy and active life (FAO, 2009). According to the United Nations (2015), over half of the global population resides in urban areas and the number is estimated to reach 66% by 2050. Considering these statistics, when referring to "all people" as in the FAO definition of food security, the urban population should be prominently featured. Nevertheless, policy and planning still consider food security issues to affect mainly rural communities. In an exhaustive overview of both international and specifically African food security agendas, Crush & Frayne (2011) found very little reference to the urban context of food security or the different dynamics of malnutrition among the urban poor as opposed to the rural poor.

Cities worldwide face the challenge of planning and managing their resources to meet the needs of their inhabitants (Lynch, Maconachie, Binns, Tengbe, & Bangura, 2013). As opportunities for livelihoods become scarce in rural areas, people flock to urban centres in search of employment and increased quality of life (Zezza, Carletto, Davis, & Winters, 2011) Often urbanisation happens at such a pace that it is impossible for planning to keep up, placing poverty and urbanization among the biggest development challenges of the 21st century (Frayne, Crush, & McLachlan, 2014). Urban environments cannot be considered as merely physical spaces, but rather they are a nexus of social, environmental and economic activities brought together by a myriad of people from all strata of society (Battersby & Marshak, 2013). The contexts explored here are consequences of the various factors at play in an urban setting that lead to food insecurity and other manifestations of inequality.

While the widely accepted FAO (2009) definition of food security mentions access to food as an explicit factor, it is ensuring availability to food through increased agricultural production that garners attention in food security discourse (Battersby & Crush, 2014). Maxwell (1999) credits this focus to a rural bias, wherein urban dwellers' nutritional challenges are downplayed, as urban markets seemingly have ample food on offer. However, fundamental availability is only one side of the coin. Access to any food that is physically available

may be constrained either spatially or financially for many urbanites (Battersby & Crush, 2014). These constraints manifest on a small scale, i.e. neighbourhood or even household scale. Urban food insecurity is thus often overshadowed by other, more visible urban challenges, such as unemployment, infrastructure, and overcrowding (Maxwell, 1999). In addition to availability and access, the definition includes the pillars of utilization and stability of food. Utilization includes e.g. sanitation and the adequate nutritional attributes of the food being consumed. Stability concerns continued access to food through shocks and volatility, which is particularly relevant in an urban context (Carletto, Zezza, & Banerjee, 2013). The four pillars overlap and influence the discourse on food security as a whole.

Urban political ecology

Political ecology (PE) studies the relationship of humans to their physical environment as well as the effect matters of the environment have in terms of the relationships between humans (Brown & Purcell, 2005). This involves for example interactions between people and the places where they live, the elements of power surrounding the division of natural resources and placing power debates into historical context in the political economy (Page, 2003). Power relations are a central notion in an urban context, which is why PE lends itself well to examining the social, economic, and environmental flows that constitute a city (Swyngedouw & Heynen, 2003). It is further emphasized by Swyngedouw & Heynen (2003) that urban political ecology (UPE) considers the city to be a cumulative result of socio-environmental processes mediating natural resources, hence it is counterintuitive to say that the urban is somehow disconnected from the rest of nature.

There are several reasons why UPE is an appropriate lens for examining urban food insecurity (Agyeman & McEntee, 2014). UPE is capable of examining hybrid relationships due to the socio-ecological production of the urban environment at its centre. The analysis of food deeply intertwines physical and social factors. Food is also distinctly rooted in power relations, as neoliberal market forces ensure that food insecurity

does not affect everyone in a given city (Agyeman & McEntee, 2014). UPE highlights the material conditions and relationships that determine which communities are more prone to food insecurity and why. This stems from the Marxist history of PE, where the interest of the elite was served at the expense of the marginalised in society (Swyngedouw & Heynen, 2003). UPE places socio-ecological processes into a physical location, such as a city, which is also fitting for the investigation of urban food insecurity as the physical environment is one of the core constructs in this analysis (Agyeman & McEntee, 2014).

In one of the early writings on UPE, Swyngedouw (1996) uses water as an entry point into juxtaposing nature and the city. Water, according to him, has biological properties alongside symbolic, cultural, and socio-economic meanings. Its distribution is wrought with notions of power, affecting who has access to water and why (Swyngedouw, 1996). Similarly, food as a necessity for human life, suffers from similar power debates leading to repression of some and dominion of others. As stated by Engels (quoted in Heynen, 2006, p. 129) "power lies in the hands of those who own, directly or indirectly, foodstuff and the means of production". Indirect ownership is especially relevant in the case of food supply chains. It can refer to for example food distribution and the infrastructure these activities require. Food retail outlets, namely supermarket chains, control every part of the supply chain without actually producing anything (Reardon, Henson, & Berdegué, 2007). The modern food industry has made nourishment into a tradeable commodity, but it also acts as an expression of power, encompassing race, gender, and class (Agyeman & McEntee, 2014). Those that do not belong to the "elite" group of owners become more vulnerable and insecure based on their position in the political economy, entitlements, and even physical location. The commodification of food further exposes communities to food insecurity through globalization, complex infrastructure, and indirect access, i.e. the dependence on the market and the power of the food retailers, that define the contemporary food system (Heynen, 2006).

Urban poverty

The United Nations (2015) predicts that over two-thirds of the global population will reside in cities by 2050 and most of this urbanization will occur among the poorer members of society. However, official statistics referencing generally agreed upon indicators for poverty (e.g. daily income) commonly show that very few urban dwellers are counted as poor in financial terms (Floro & Swain, 2013). A lack of reliable data on urban poverty is both a cause and an effect of these biased indicators and consequently influences research on issues such as urban food insecurity and informality, both direct consequences of urban poverty (Fox, 2014; Weatherspoon, Oehmke, Dembele, & Weatherspoon, 2015). Many cities in the Global South, e.g. Bangkok and Manila, have seen substantial economic growth in terms of per capita consumption, but the growth does not portray the widening gap between the wealthy and poor cohabiting the same urban space (Floro & Swain, 2013).

Statistically, urbanites may not be considered poor, but there is an inherent contradiction when it comes to the number of people living in informal settlements. A United Nations report on urbanization (2015) estimates that 870 million people reside in urban informal settlements, or slums, which amounts to approximately one third of all urban residents in developing nations. Informal settlements are characterized by precarious dwelling structures, lack of access to services, overcrowding and inadequate water and sanitation facilities (Fox, 2014). As infrastructure is one of the most visible ways to 'measure' development, the prevalence of slums leaves many cities in the Global South wanting in this respect (Frayne & McCordic, 2015). The shortcomings of urban infrastructure and its inability to meet rapid urbanization patterns of many developing countries contributes to the environmental context of urban poverty (Tolossa, 2010), which goes further than measuring mere income.

Informality is at the heart of urban poverty, encompassing habitat, employment, and nourishment. Informal settlements have been

traditionally treated as by-products of modernization, where rural migrants are forced to initially dwell before being integrated into urban society as their wealth increases. However, this view is heavily criticized due to the questionable practical and historical evidence of wealth trickling down as societies develop (Fox, 2014). Frayne & McCordic (2015) further highlight that whatever scarce services and infrastructure are available to the urban poor are usually much more expensive than what is provided in more formalized areas. This further exacerbates inequalities experienced by the urban poor.

While slums represent the physical manifestation of informality and urban poverty, the informal economy plays just as relevant a role in the urban landscape. Study of the informal economy encompasses several fields of research and focuses on its size and composition, drivers, causes, and linkages between several areas of development (Chen, 2012). There are many definitions of the informal economy, but most of them include functioning outside of government regulation due to inefficient enforcement as well as not paying taxes (Brown & McGranahan, 2016; Elbahnasawy, Ellis, & Adom, 2016).

The prevalence of urban poverty and informality indicates that social sustainability is still lacking in global supply chains (Yawar & Seuring, 2017). In order to be inclusive of e.g. the urban poor, supply chains must consider the needs of people before profits (Järvensivu *et al.* , 2018; Touboulic & Ejodame, 2016). For example. Järvensivu *et al.* (2018) suggest that the aim of the food industry should be to provide people with food rather than make profits for stakeholders. This approach would not exclude people based on their financial/ societal status. For more inclusive business practices and economies in general, Brown & McGranahan (2016) emphasize the importance of understanding the informal economy for several reasons. First, employment in the informal sector is constantly growing and to build more inclusive economies and supply chains, it must be taken into serious consideration. Second, inclusive supply chains cannot be achieved if the relationship between authorities and the informal sector is not improved. Without sufficient understanding of the dynamics

of the sector, this relationship will remain strained and achieving inclusiveness difficult. Third, due to its heterogeneous nature, activities in the informal economy vary tremendously in terms of efficiency and profitability. With sufficient knowledge on the functioning of the sector it is possible to recognize the valuable innovations and harness them appropriately. Finally, the importance of the informal sector for people at the bottom of the pyramid, i.e. the poorest members of society, has to be considered whenever the informal sector is concerned (D. Brown & McGranahan, 2016).

Whereas Brown & McGranahan (2016) and Chen (2012) treat the informal economy as an opportunity for innovation and research, some view informality as a hindrance to development that should be contained (Elbahnasawy *et al.* , 2016). Proponents of this latter approach have a similar aim to understand the informal economy, but rather than learn from it they wish to develop policies to hinder its spread and adverse effects. Characteristics of the informal economy they wish to forestall are its distorting macroeconomic effects, inefficient resource use, and small-scale, low-return production (Elbahnasawy *et al.* , 2016). This school of thought subscribes to the *voluntarist* view of the informal economy, which maintains that actors choose to remain informal for example to avoid paying taxes or dealing with bureaucracy for registering a company.

In addition to the voluntarist view, there are three other schools of thought described by Chen (2012). *Dualists* consider informality as completely separate from the formal sector, existing as a side effect of insufficient economic growth. The legalists consider stringent state regulations and persistent entrepreneurs to be the main drivers of the informal economy. Unlike the voluntarists, legalists view entrepreneurs as being forced to come up with alternative ways to function due to e.g. anti-poor legislation and policies. The final school are the *structuralists*, who consider informality as being driven by capitalist growth via formal companies exploiting cheap informal labour to maximize their profits (Chen, 2012). None of these schools provides definitive answers, as the informal economy derives from

a multifaceted set of circumstances, but help in understanding it. In a developing world urban context, informality cannot be bypassed. Brown & McGranahan (2016) even claim that no endeavour seeking social or environmental transformation of the global economy can ignore informality, a view that is echoed in this paper. The dynamics of the informal food sector are extremely relevant in urban food insecurity research and its potential solutions. In line with this view, Brown & McGranahan (2016) suggest adding a fifth element to the four schools of thought on informality suggested by Chen (2012): the *inclusionist* school. This approach emphasizes initiatives whereby marginalized communities can partake in decisions that concern their everyday lives and rights.

SCM in diverse contexts

Urban dwellers, poor and wealthy, are predominately dependent on the market for their nourishment, hence the global food supply chain is a relevant concept in the study of urban food insecurity. The market for food has transformed in the last two decades in several significant ways (Maertens, Minten, & Swinnen, 2012). The most relevant in terms of urban populations are the global level shifts in retail dynamics towards multinational corporations (MNCs) and the increasing integration of supply chains that comes with it. MNCs are usually based in developed or advanced markets, and see developing countries as new business opportunities especially in the wake of globalisation-friendly policies put in place in the 1990s (Reardon *et al.* , 2007). There are however substantial challenges in the performance of operations as well as network designs when entering markets in the Global South.

Lorentz *et al.* (2013) utilize the framework of geography, resources, and institutions (GRI) (not to be confused with Global Reporting Initiative) to review how market characteristics affect supply chain functions and overall business success. The geographical attributes of a country may bring significant difficulties to logistics operations due to e.g. topography, landlocked status, and population density. Isolation from major trade routes and especially from sea ports have

been acknowledged as causes for food insecurity (M. E. Brown, Silver, & Rajagopalan, 2013). The levels of infrastructure in a country or city are also a major player in isolating an area from the global market, often resulting from restricted availability or allocation of resources (Lorentz *et al.* , 2013). Urban logistics brings about a particular set of challenges. Cities are not just a physical location, but contain an endless number of stakeholders and 'systems within systems' (Lagorio *et al.* , 2016). Navigating these systems is not just a technical matter but requires careful analysis of underlying factors, which according to Lagorio *et al.* (2016) is still widely under researched in urban logistics literature. Frameworks like the GRI (Lorentz *et al.* , 2013) are helpful in establishing a more comprehensive research paradigm that will translate into practice as well.

Other resource related challenges suggested by Lorentz *et al.* (2013) in their framework are the level of competence in the local labour force, issues with currency and interest rates, and a general lack of capital for SCM-related activities. The institutional characteristics also contribute to the potential difficulties of entering a new market or in the isolation of a market from global trade. Economic and political barriers are often more potent than physical ones in hampering participation in global trade (M. E. Brown *et al.* , 2013). The institutions that uphold these barriers often control many SCM related activities such as international trade and transport infrastructure, as well as contribute to the overall business and national culture (Lorentz *et al.* , 2013).

Lorentz *et al.* 's (2013) GRI framework is a useful tool for discussing the role SCM plays in urban food insecurity, because it considers underlying SCM factors that have considerable effects on activities in developing and otherwise challenging markets. Additionally, the food supply chain is extremely complex and dynamic, relevant to all and under constant scrutiny from consumers and industry alike (Beske, Land, & Seuring, 2014). Considerations for the sustainability of the food supply chain have emerged from the scrutiny as negative environmental and social impacts of the food industry come to the attention of the public.

Urban food retail

Urban populations are net food buyers and spend a majority of their income on food (Maitra, 2016) so it is prudent to analyse the existing retail network in conjunction with urban food insecurity. Food security as such is not discussed much in SCM literature, but there is an active stream of literature on supermarkets spreading as the dominant form of food retail in developing or emerging economies. Due to its multifaceted effects on society, this stream is not limited to the retail or SCM literature, but discussed in multiple disciplines across the social sciences and while the research in these different disciplines often overlaps, an interdisciplinary discourse on the subject has not been established (Nguyen, Wood, & Wrigley, 2013).

Studies conducted in North Africa explored consumer reactions to Western supermarket chains entering the market (Amine & Lazzaoui, 2011; Amine & Tanfous, 2012). Research conducted in Morocco (Amine & Lazzaoui, 2011) concludes that the entrance of a major supermarket chain into the market contributes to largely social, even classist consequences. If the retailer fails to sufficiently adapt to local customs and traditions, in terms of store location and functioning, the lower income population generally does not have physical or financial access to these chains. Additionally, if the chains do not cater to local traditions and customs, this can lead to outright boycotting of the new retailers (Amine & Tanfous, 2012). In a North African context this might mean having a wide array of alcohol or pork products for sale, or not offering halal products. Amine & Lazzaoui (2011) further discuss the relative success of a smaller, local chain that eschews suburban locations that are impossible to reach by public transport and upholds local service standards.

In analysing activities of global large retailers (GLR) in Africa, Nandonde & Kuada (2016) echo the above findings. They further specify that micro retailers are one of the keys to operating a food retail business in Africa and the developing context in general. Low-income consumers rely on micro retailers in part due to the social nature of the

transactions which gives them the opportunity to e.g. buy with credit. The informal food sector is a relevant part of the micro retailing scene in developing countries. GLRs have been able to penetrate developing countries due largely to the liberalization of trade in these countries as well as the acceleration of foreign direct investment (FDI) into these markets (Nguyen *et al.* , 2013).

Research focusing mainly on price as an access factor sees supermarket expansion into developing countries as positive in terms of food security, as supermarkets can price their products at lower rates thanks to economies of scale (Battersby & Peyton, 2014). However, Minten *et al.* (2010) point to several factors that indicate that the urban poor are not fully embracing the supermarket trend. The aforementioned micro retailer domination of the traditional retail scene is one, as the underlying social dynamics permit consumers to negotiate and utilise credit systems when shopping food. Foreign supermarkets are also likely to offer products that are branded, pricing the urban poor out as a result. Finally, the urban poor prefer to buy products in smaller quantities and more often, which is usually not possible in formal supermarkets (Minten *et al.* , 2010).

Applying parts of the GRI framework of Lorentz *et al.* (2013) to a specific city could pinpoint some of the individual SCM as well as broader issues faced by that city and what leads its poorer citizens to be food insecure. Examining the geography of supermarkets in Cape Town, Battersby & Peyton (2014) point out that there are eight times as many supermarkets in wealthier areas than in areas where the lowest income residents reside. Supermarkets located near transport hubs had considerably lower stocks of fresh produce than those located in richer neighbourhoods, providing commuters with less nutritious options. While it is very common in Cape Town and other similar cities to run errands while commuting, the physical locations of the supermarkets are still extremely relevant. The supermarkets with the best selections are located in areas inaccessible to the poor, due to poor public transport links. The legacy of apartheid also maintains the wealthy areas far away from the poor areas (Battersby & Peyton, 2014). These flows can lead

to poorer areas becoming ‘food deserts’, which are areas where fresh and healthy food at affordable prices is either difficult or impossible to obtain (Myers & Sbicca, 2015). Battersby & Crush (2014) argue that a food desert is a useful concept for spatializing food insecurity, but it fails to grasp the complexity of the foodscapes many urban poor, especially in a developing context, face. It is not uncommon for a poor urbanite to work far from their place of residence, meaning that a lot of their household expenditure is allocated to transit, as food retail outlets are much more likely to be located around transport hubs and business districts than in poorer communities (Battersby & Crush, 2014).

This legacy highlights the importance of historical and political flows in the context of food security. Many cities in both developing and developed countries experience classist or racist divisions similar to apartheid, which decades later still influence daily activities. This goes to show that geography and institutions are intertwined in the urban landscape, making the GRI framework particularly apt.

The next section introduces several indicators and frameworks for measuring food insecurity from several different perspectives.

Measuring urban food insecurity

The complicated and multidimensional nature of food security makes establishing reliable measuring tools challenging. Carletto *et al.* (2013) recommend using the level of analysis as a starting point. For example, global or regional level food security needs to be approached from a more production-oriented perspective, whereas for urban individuals or households, accessibility is the key factor. Headey & Ecker (2013) elaborate on this view by emphasizing the different types of data that need to be derived from any food insecurity indicators, which they have divided into three broad categories. First, the indicator needs to be comparable among a multitude of different groups, such as regions and social factors. The rural bias is an example of the indicator favouring one type of community over another and providing skewed data. Second, they suggest combining several inter-temporal approaches, i.e. long-

term data, seasonality as well as shocks such as disasters and spikes in prices and incomes. Last, any indicators need to address the distinct nutritional needs of different demographics. The needs of infants or the elderly differ greatly from those of an adult male doing physical work for example. This variety does not only refer to physical needs, but differences in cultures and other societal influences (Headey & Ecker, 2013).

Maxwell, Vaitla, & Coates (2014) explore different food security indicators and their primary uses. They have divided them into four categories, depicted in Table 2.

Table 2 Categories of food security indicators (adapted from Maitra, 2016; Maxwell *et al.* , 2014; McCordic & Frayne, 2018)

Category	Indicators	Use
Dietary diversity and food frequency	Food Consumption Score (FCS), Household Dietary Diversity Score (HDDS)	What people eat and how often, the diversity of intake
Consumption behaviour	Coping Strategies Index (CSI), Months of Adequate Household Food Provisioning (MAHFP)	Behaviour and strategies engaged when food and/or money runs out
Experiential measures	Food Insecurity Experience Scale (FIES), Household Food Insecurity Access Scale (HFIAS), Household Hunger Scale (HHS)	Household behaviour following insufficient food access
Self-assessment measures	e.g. Gallup polls	subjective assessment of food security status

Many of these indicators are being used by organizations, such as the World Food Programme, which work on food security issues. On their own, all of these indicators do capture at least one dimension of food insecurity, but when relying on a single indicator there is a risk of misrepresentation (Coates, 2013). The African Food Security Urban Network (AFSUN) has conducted extensive research projects both in Southern Africa as well as other regions around the world through affiliations and partnered research projects (McCordic & Frayne,

2018). In these projects, they have generally administered the HDDS, MAHFP, and HFIAS indicators in their surveys, but as the surveys were carried out in extremely diverse environments, a lot of the challenges started with the basic definitions and linguistic obstacles. Defining basic concepts such as ‘food’ and ‘household’ to both the respondents as well as the research teams required considerable efforts, as well as then figuring out who the best person to survey would be in each household.

The HDDS scale measures dietary diversity by asking respondents whether anyone in the household has consumed any of 12 particular food groups[1] in the past 24 hours. HDDS has been found to correlate with other food security measures used (Maxwell *et al.* , 2014). The HFIAS scale, measuring the social, physical, and economic experiences of limited access to food with a set of questions, has also been found to correlate with other indicators, such as childhood under-nutrition. The questions, such as ‘in the past four weeks, did you worry your household would not have enough to eat?’, are answered with a never-often scale[2] . The MAHFP measures the months in the past year when the household has gone without proper food provisioning. Information on the reliability of this indicator is limited, but Mccordic & Frayne (2018) predict it will become more relevant as research in this field advances. Subjective assessments done through Gallup polls could provide relevant information, but are easily influenced by for example dietary reference points, cultural issues and feelings of shame and are thus easily corrupted (Headey & Ecker, 2013; Maxwell *et al.* , 2014).

The lack of data in urban food insecurity research is partly to blame for the negative bias its research is experiencing (Frayne *et al.* , 2014). The more data that is gathered within similar delimitations and scopes, the more reliable the indicators become. It is however also acknowledged generally that measuring food security will always be difficult and the

[1] Cereals; roots & tubers; vegetables; fruit; meat, poultry, offal; eggs; fish & seafood; pulses/legumes/nuts; dairy products; oil/fats; sugar/honey; miscellaneous

[2] Never; Rarely (once or twice in the past four weeks); Sometimes (three to ten times in the past four weeks); Often (more than ten times in the past four weeks)

best method is to conduct more research using a combination of different techniques and indicators (Maxwell *et al.* , 2014). A consensus that rises from the literature is that focusing solely on undernutrition and food availability is no longer an option, and especially in urban environments the experiential indicators as well as those researching coping strategies need to be emphasized (e.g. Headey & Ecker, 2013; Maxwell *et al.* , 2014; McCordic & Frayne, 2018). The next section discusses the multifaceted nature of urban food insecurity in detail, focusing on the factors and metabolic flows that underlie it.

Managing urban metabolic flows for food security

The classic trifecta of economic, social and environmental factors in sustainability research is almost perfectly encompassed in food (Grant, Trautrims, & Wong, 2017). There is substantial literature that explores the environmental effects of food distribution but social aspects of sustainability are investigated less both in food SCM as well as SSCM literature in general (Yawar & Seuring, 2017). While urban food insecurity has elements of all three aspects of sustainability, its social effects are the most far reaching and complex, encompassing health as well as questions of race and class. Touboulic & Walker (2015) in their literature review of SSCM theories note there appears to be an increasingly holistic approach to SSCM research, focusing on all three sustainability pillars rather than focusing on just one. The incorporation of external stakeholder pressures, as opposed to incentives based purely on profitability, also indicates that SSCM literature is widening its focus (Touboulic & Walker, 2015).

The exclusion of marginalized populations from supply chains is identified by Yawar & Seuring (2017) as an under researched social issue in SCM literature. Marginalization can derive from a number of different contexts, but this paper focuses on poverty as the marginalizing factor. Poverty alleviation remains a top priority in development policy and research, but supply chain studies rarely approach it. Hall & Matos (2010) however investigated the inclusion of poverty stricken communities in supply chains through a study in the Brazilian biofuel

industry. They base their research on the ideas laid out by Prahalad (2005) regarding innovation and skills found at the 'bottom of the pyramid' and integrating them into mainstream supply chains. Gold *et al.* (2013) also base their research on this approach, concluding that working at the bottom of the pyramid level can provide new avenues in business logic, which is needed as supply chains become increasingly globalized and function in diverse societies.

Silvestre (2015) suggests that supply chains evolve through a learning process, and sustainability in a supply chain starts to make business sense towards the end of the learning process. The external environment as well as institutional presence are key factors in the learning process, tying Silvestre's (2015) argument in with Lorentz *et al.* 's (2013) GRI framework. The challenging environments of emerging economies and their lack of institutional strength has contributed to the difficulties in establishing sustainable supply chains in such markets (Silvestre, 2015).

Authors in the field of SCM call for sustainable supply chain management practices to become more holistic, including social issues along with the environmental and the economic (Grant *et al.* , 2017; Touboulic & Walker, 2015; Yawar & Seuring, 2017). As well, researchers note the predominantly Western and MNC perspective on sustainability (Pagell & Shevchenko, 2009; Touboulic & Ejodame, 2016) which, especially in the case of urban food insecurity, ignores the many nuances of cities in different geographical and cultural contexts. The challenges presented in the external environment and the lack of institutional strength suggested by Silvestre (2015) are likewise observed from a Western perspective.

Some factors leading to urban food insecurity have been summarized in Figure 4.

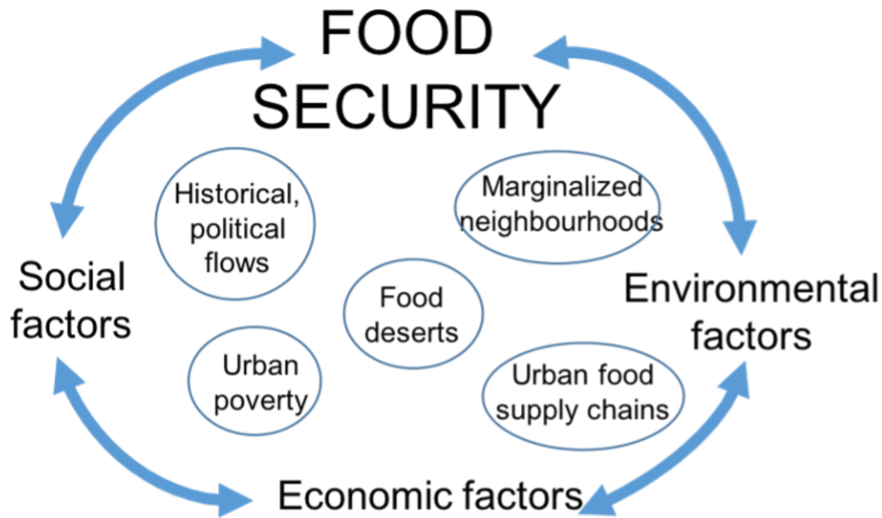

Figure 4 Factors in urban food security (source: author)

Figure 4 shows the linkages between different SSCM factors as well as some of the socio-environmental elements that underlie urban food security. The previously under-researched social issues are given an equal weight with environmental and economic factors, and all the factors are connected to each other. Historical and political flows are an example of underlying factors for why some neighbourhoods are marginalized and food supply chains therefore may not function in those parts of town as it is not deemed profitable enough.

Focusing on the material and immaterial flows that make up a city and its inequalities, the concept of urban metabolism emerges. The concept entails the material and immaterial flows within a city that produce its socio-economic and biophysical essence (Castán Broto, Allen, & Rapoport, 2012). There are many approaches to urban metabolism, and it is inherently an interdisciplinary notion. Drawing heavily from UPE, it is concerned with the interaction of processes and people on the surrounding environment, and how these processes reproduce certain assumptions and circumstances. Urban metabolism however offers a less abstract approach, focusing on physical, material and financial

flows in addition to the social and political ones at the heart of UPE. It is therefore a prudent lens for the analysis of food supply chains and their influence on food security.

Urban food insecurity is produced through a number of social, economic, and environmental contradictions (Heynen, 2006). Using perspectives emerging from urban metabolism and UPE, it is possible to develop more functional cities using inspiration from nature, optimize material flows, address urban inequality, and resignify socio-ecological processes that have the potential to reconfigure existing flows (Castán Broto *et al.* , 2012). SSCM in its quest to become more holistic could incorporate some notions from the urban metabolism. For example in urban logistics, considering the city as an ecosystem could help optimize material flows into closed loop supply chains (Lagorio *et al.* , 2016; Wachsmuth, 2012). Different subsystems feeding into each other, such as food supply chains producing waste, create metabolic flows (Biel, 2014). However, these flows do not function on their own, as they would in nature (Swyngedouw, 2006). Social flows govern the supply chains, leading to reproduction of inequalities in terms of distribution to marginalized neighbourhoods and full-blown food deserts.

Using the urban food desert concept as a lens sheds some light on the complicated circumstances that can lead to food insecurity in certain areas. The neighbourhoods classified as food deserts, especially in developed countries such as the US or the UK, are usually low income and inhabited by ethnic minorities (Weatherspoon *et al.* , 2015). This speaks of classist and racist discrimination in the locations of food retail outlets. The flows that govern food supply chains reproduce spatial and financial inequalities through acts of power. The exodus of supermarkets in favour of larger locations in the suburbs, unreachable without a private vehicle, has been justified with claims of profitability, leaving inner city low-income residents with no access to fresh produce (Battersby & Crush, 2014; Myers & Sbicca, 2015). Racial and cultural aspects play a large role in the formation of food deserts. Anguelovski (2015) investigated a case in Boston where affordable ethnic markets, stocking products from the Latin American countries many of the

neighbourhood's residents originated from, were closed down in favour of a gentrified and significantly more expensive supermarket. In this case the residents technically had physical access to produce, but it was unaffordable in the long run and culturally inappropriate. The supply chain cannot therefore be considered inclusive. These types of issues are present in cities all across the world (Anguelovski, 2015; Battersby & Crush, 2014) and would benefit from additional empirical research.

Spatializing food security through food deserts is useful but does not capture the complexity of food security; experiential scales such as the HFIAS and FEIS provide some insight into its intricacies. In urban contexts, one can live in a neighbourhood where food is readily available, but simply be financially constrained from accessing it (Battersby & Crush, 2014). For this reason, experiential data is vital as there can be numerous different flows that affect how and why households or individuals become food insecure. McCordic & Frayne (2018) predict that indicators measuring consumption behaviour, such as the MAHFP, will increase in relevance once research in the field advances. Data on consumption and especially coping strategies of urbanites is valuable to both GLRs trying to break into new markets as well as organizations and researchers looking into urban food insecurity. As GLRs are spreading through the Global South, and often not succeeding as well as they had hoped (Amine & Tanfous, 2012; Nandonde & Kuada, 2016), their SCM strategy needs to be better adapted to the environment, rather than relying on a one-size-fits-all mode of operation. Applying aspects of the urban metabolism perspective to the evolution of urban supply chains in the Global South could result in a more refined version of the current GLR spearheaded grocery retail strategy. An inclusive supply chain can still remain a top-down approach if elements of holistic SSCM are used as the principles. Being aware of the consumption habits and the dynamics of urbanites in diverse contexts, factors such as location decisions and which products to sell would give the GLRs' supply chains the opportunity to have a positive effect on urban food insecurity rather than exacerbating the issue.

Juxtaposing coping strategies with consumption habits, e.g. the

informal food sector with GLRs, a more bottom-up approach emerges, where the dynamics of the urban poor are harnessed to alleviate urban food insecurity. The inclusionist school suggested by Brown & McGranahan (2016) is in line with this approach. In terms of food security this would give micro retailers, who now function largely uncontrolled within the IFS, a better framework within which to do business. Castán Broto *et al.* (2012) refer to such structures as 'parallel metabolisms', which function alongside the formal flows. It has been widely discussed in the literature that the IFS is a significant source of food for the urban poor, yet city authorities have a largely unfavourable attitude towards it, often subjecting vendors to stringent checks and even violence (Battersby & Crush, 2014; Patel, Guenther, Wiebe, & Seburn, 2014). Nandonde & Kuada (2016) maintain that the strategies used by micro retailers are the most relevant operational guidelines to be used when entering markets such as Africa. A more open approach to urban planning, where currently marginalized citizens are included in the process, could significantly improve the landscape of micro retailers in the food sector. The current socioecological flows do not harness sustainability, and will continue to produce urban inequalities, but using tools such as UPE and urban metabolism, it is possible to imagine and realise an alternate urban reality (Castán Broto *et al.* , 2012). In this reality parallel metabolisms, such as the IFS, would cease to be marginalized by formal flows and be included in urban supply chains as viable options for the dynamic and diverse needs of urban residents.

Conclusions

The world is urbanizing at an unprecedented pace, with over half the global population residing in cities for the first time in human history. Urban areas have a distinctly different dynamic from rural contexts. Approaches, such as increasing food production, which are relevant in the countryside do not apply in an urban context and may lead to urban food policy to be swept aside as a non-issue, as food is deemed readily available. Urban food security suffers from a rural bias, where similar solutions are offered regardless of context. To provide an appropriate

course of action for urban food security, its causes and effects must be better understood. Food security in any context is a multifaceted subject, and especially in cities the specific dynamics of the environment make its analysis difficult. While it is being acknowledged as a major challenge in development discourse, urban food security suffers from a lack of interdisciplinary research and data. Other urban issues, such as unemployment and overcrowding, take precedence over food insecurity even though they are all inherently connected. Much focus is also on ensuring food availability through increased production, whereas financial and spatial access constraints to existing resources receive less attention.

As a literature review, this chapter opens avenues for further empirical study. Emphasizing the concept of an inclusive food supply chain would give social issues equal weight, while not disregarding other factors in SSCM. Supply chains evolve through a learning process, and a part of that process is adapting to the environment in which the supply chain functions steadily. In many developing countries, this means not going in with large supermarkets in the suburbs but looking at the dynamics of micro retailers and learning from their strategies. This includes the informal sector, which is a primary source of food and employment for many poor urban residents. In that regard, SCM researchers need to put more emphasis on social and learning structures in supply chain evaluation, design, and optimization as part of a holistic perspective. Additional research should emphasize the informal sector as a goal to harness the current coping mechanisms used by food insecure citizens. This could result in a reliable source of food that respects the dynamics of urbanites in different contexts and improves the opportunities for marginalized populations.

These gaps pertain to both academics and practitioners in terms of the evolution process of supply chains. Micro-retailers and the informal sector appear to be the key to food security on a smaller scale, such as neighbourhood, as well as tapping into the business opportunities emerging from the increasing urban population. This literature review maps these gaps for future empirical studies to tackle in a more practical

manner. The following research questions are proposed:

- How can food supply chains consider specific dynamics of urban poor neighbourhoods to avoid a 'one-size-fits-all' mentality while operating in urban areas?
- In addition to specific dynamics, how can food supply chains adapt to shocks and disturbances that may disproportionately affect marginalized populations in terms of food access?
- What is the role and relevance of micro-retailers and the informal food sector for food security, especially in a developing country context?
- How can the learning process of supply chains include sustainability from the outset rather than waiting for the supply chain to 'evolve' to a stage that is mature enough for sustainable approaches?

The lack of data and negative bias has had its effect on urban food security research. Food supply chains, along with other urban metabolic flows, play an extensive role in urban nutrition. Including marginalized populations and their parallel supply chains into a holistic urban reality would pave the way for sustainability in a traditionally profit-oriented stream. However, more research is necessary both from an academic as well as a practitioner point of view before steps can be taken in policy and planning.

As with all research, this paper has limitations as it only comprises a literature review to investigate linkages of food supply chain management to availability and accessibility of food for urban communities, particularly in poor urban contexts. The review conducted is both rigorous and robust based on the framework used, however this paper offers no empirical research to validate that investigation. Nonetheless, the avenues suggested for further research are an important start to enhancing the interdisciplinary discourse in the subject and bringing SCM more into the debate such that it becomes a referent discipline in its own right.

The chapter contributes to SSCM literature by integrating disciplines which clearly contribute to the discourse in a relevant way, forming a comprehensive view on urban food security. Urban food security as a phenomenon is not tied to any geographical context, but needs to be approached as a global issue. With more studies and data from cities around the world, businesses, governments and NGOs can begin building a comprehensive picture of the world's food insecure people, the underlying reasons behind food insecurity and what can be done to mitigate it.

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APPENDIX 4

Essay 2

This essay is in third review in *International Journal of Logistics Management*

Exploring Supply Chain Issues Affecting Food Access and Security Among Urban Poor in South Africa

Abstract

Purpose: Access to food through retail supply chain distribution can vary significantly among the urban poor and leads to household food insecurity. The paper explores this sustainable supply chain phenomenon through a field study among South Africa's urban poor.

Design/Methodology/Approach: Urban metabolic flows is the theoretical basis in the context of supply chain management. The field study comprised 59 semi-structured interviews in one South African township. Data were recorded, transcribed and translated, and coded using NVivo 12 to provide an inventory of eight themes categorized and patterned from the analysis.

Findings: Findings indicate societal factors play a significant role affecting food distribution, access and security from a spatial perspective of retail outlet locations and a nutritional standpoint regarding quality and quantity of food.

Originality: Study is interdisciplinary and contributes by linking UN Sustainable Development Goals and supply chain management through urban metabolic flows from development studies as an overarching framework to enable analysis of relationships between physical, social, and economic factors in the urban environment.
Research Limitations/Implications: Study is exploratory in one township and while rigorously conducted the generalisability of

findings are limited to this context.

Practical Implications: The study practically contributes by providing guidance for food retailers and policy makers to include nutritional guidelines in their distribution planning, as well as the dynamics of diverse neighbourhoods that exist in modern urban contexts.

Social Implications: New forms of retail food distribution can provide better security and access to food for the urban poor, contributing to Sustainable Development Goals 2 Zero Hunger and 11 Liveable Cities.

Keywords: Food access and security, Sustainable Development Goals, Food retail supply chain distribution, Urban metabolic flows

INTRODUCTION

Food security is defined as all people having physical, social, and economic access to sufficient, safe, and nutritious food to maintain a healthy and active life (FAO, 2009). Two United Nations' Sustainable Development Goals (SDGs) act as a platform highlighting the complex nature of food security: SDG 2 Zero Hunger and SDG 11 Liveable Cities. SDG 2 provides objectives related to agricultural production and nutritional levels (Veldhuizen *et al.* , 2020) while SDG 11 contain an urban goal striving for liveable cities, which further strengthens the notion of urban significance in global development (Barnett and Parnell, 2016). However, research on this phenomenon is lacking despite over half the global population residing in urban environments.

The concept of urban is itself very diverse. Social, political, and historical factors influence the fabric between different urban contexts as well as within a single city. Access to food supply chains varies significantly within urban areas with some areas marginalised by a lack of formal retail outlets, leading to notable levels of household food insecurity. Juxtaposed with precarious living conditions of many poor urban areas, urban food insecurity is thus tantamount to a humanitarian crisis, but

often gets bypassed by other urban concerns (Maxwell, 1999, Haysom, 2015). We therefore approach urban food security in this paper from an interdisciplinary perspective grounded in the notion that urban dwellers are predominately net food buyers and therefore dependant on the retail food supply chain.

Causes of food access and security are ambiguous, man-made and their onset slow (Van Wassenhove, 2006) which makes it a challenging phenomenon to address. Additionally, the complexity of the global food system further exacerbates notions of power in urban food retail (Tuomala, 2020). Local food supply chains are increasingly marginalised due to large global retailers dominating the market (Maertens *et al.* , 2012). Such retailers are managed from a Global North[3] perspective and hence subtleties of different contexts may be missed.

The sustainable supply chain management (SSCM) literature is expanding to include external stakeholder pressure, diverse contexts, and social issues in addition to economic and environmental sustainability (Touboulic and Walker, 2015). Nonetheless, social issues remain under researched in SSCM with the urban poor excluded from regular supply chain activities (Yawar and Seuring, 2017) and such studies, which employ a Global North perspective on sustainability, ignore different nuances of food supply chain dynamics in poor urban neighbourhoods in the Global South (Pagell and Shevchenko, 2009, Touboulic and Ejodame, 2016).

SDG 2 insufficiently addresses much of the supply chain between production and household nutrition or consumption (Das *et al.* , 2018). Reardon (2015) and Veldhuizen *et al.* (2020) refer to this as the 'hidden' or 'missing' middle respectively, and these concepts refer to a disconnect between production and nutrition and the array

[3] The term Global South is widely used in development literature referring broadly to contexts outside Europe, North America, and Australia & New Zealand, i.e. the Global North, (Dados and Connell, 2012) and we use these terms in this paper.

of processes that ensure food reaches the consumer, i.e. the supply chain. Further, research and measurement of SDGs are done largely via quantitative metrics, leaving out social, economic, cultural, and historical nuances which affect diets and vary significantly in urban environment contexts. The notion of 'urban' is heterogenous and therefore difficult to define in exact terms. This poses issues in how to measure and assess the progress made by SDG 11 (Caprotti *et al.* , 2017). The SDGs therefore present a unique opportunity and starting point to inform interdisciplinary and 'inter-goal' research and practical action to address these shortcomings.

Our objective is to extend research on these issues to understand factors impacting food access and security among the urban poor. To achieve that objective, we explore this phenomenon through three research questions pertaining to how spatial and financial factors influence urban food shopping dynamics, which aspects of the triple burden of malnourishment (TBM) are challenging factors, and how these two sets of factors affect food retail supply chain management (SCM) in an urban poor township neighbourhood in South Africa. Following is a literature review discussing these factors before presenting urban metabolic flows from development studies as a theoretical framework for our exploratory investigation. Then, the method for the empirical study is presented before reporting findings from our analysis. Lastly, we conclude the paper with contributions.

2. LITERATURE REVIEW

2.1 Spatial and Financial Factors

Urban dwellers generally access their nourishment needs through the market (Kimani-Murage *et al.* , 2014). Household food insecurity therefore stems from financial or spatial constraints (Battersby and Crush, 2014). Financial constraints refer to inadequate entitlements, where malnourishment is caused by a lack of the means to acquire food and not insufficient availability (Sen, 1981). Spatial constraints are linked to financial prowess as limited entitlements can force people to live in marginalised neighbourhoods, characterised for example by precarious housing structures, inadequate access to basic services and overcrowding (Fox, 2014). As urban populations continue to grow, so do poor and informal neighbourhoods in cities. SCM's contribution could be valuable in determining inclusive distribution networks and retail configurations.

An important debate in sustainable urban development across the globe is the standardization of cities and how that can be achieved. Many actors promote an urban agenda, but do not all share the same vision and understanding of the city's role on the one hand, nor acknowledge context dependency of urban development on the other (Barnett and Parnell, 2016). For example, megacities with populations of tens of millions have different needs than smaller towns and rural regions.

2.2 The Triple Burden of Malnutrition

Consumption of fresh and nutritious food is driven by supply and demand but their relationship and/or causality are not always apparent, as in the concept of a 'food desert' (Weatherspoon *et al.* , 2015). A food desert is an area where fresh and healthy food is unavailable for purchase for residents due to spatial constraints (Wrigley, 2002). Whether these deserts form due to lack of demand, i.e. people would not buy fresh produce even if it was available, or supply, i.e. retailers do not include fresh produce in their selection, is a complex and

context dependant question. In the Global North high rates of 'over nourishment' are considered a part of the food desert definition owing to low consumption of nutritious produce and a high prevalence of processed, energy dense foods, resulting in non-communicable diseases such as obesity and diabetes (Weatherspoon *et al.* , 2015).

In the Global South, residents in a food desert are more likely to suffer from TBM which encompasses undernourishment, micronutrient deficiency, and over nourishment (Gómez and Ricketts, 2013). The TBM highlights the importance of widening the food desert focus from spatial factors of availability and lack of outlets to include access and utilisation factors as well (Battersby, 2012). The production and agriculture-oriented approach is more focused on large-scale instances of famine where entire communities suffer from simultaneous food insecurity, whereas in urban areas the occurrences are subtle and affect households and even individuals in different ways (Maxwell, 1999). Access and utilisation do not pertain solely to the fundamental availability of food, but rather the unique spatial and financial constraints households may be facing. Additionally, demographic aspects such as education level and social class influence utilisation of available food (Weatherspoon *et al.* , 2015). Therefore, poor urban communities are more likely to suffer from any of the three burdens than their wealthier counterparts (Gómez and Ricketts, 2013).

2.3 SSCM in a Food Security Context

Various calls have been made for SCM research to extend beyond its corporate and technical roots into more holistic contexts (Touboulic and McCarthy, 2015, Van Wassenhove 2019). Further, SSCM has been growing as a research theme over the past decade but this work has largely been focused on environmental and economic sustainability, especially in an SCM context (Grant *et al.* , 2017), as opposed to social sustainability.

Yawar and Seuring (2017) indicate that social issues only affecting firms' short-term performance are of managerial concern, while larger

underlying issues with potential long-term societal repercussions are overlooked. Short-term concerns include factors related to health and safety of employees, as well as labour conditions of individual companies. The SCM community could thus have a pivotal role through including more of the urban poor and informal economies in mainstream research, thus improving social sustainability for all parties involved. For example, Duarte *et al.* (2019) explore the challenges of last mile delivery in a Brazilian slum, touching upon accessibility issues in an informal context. Their study is a precursor for more interdisciplinary research where SCM and development literature address both the practical problem, i.e. access difficulties, as well as some of the deeper societal issues such as marginalisation and food insecurity.

SCM research is largely undertaken in a Global North context (Gupta and Gupta, 2019) that also dominates the SSCM discourse even though supply chains are global and include extremely diverse stakeholders (Silvestre, 2015, Touboulic and Ejodame, 2016, Yawar and Seuring, 2017). Global South economies represent new markets for multinational corporations but entering these markets can be challenging (Amine and Tanfous, 2012) as dynamics in them differ significantly from the Global North, where multinational corporations are more accustomed to functioning (Nandonde and Kuada 2016).

Food retail and distribution systems have been modernizing over the last four decades, shifting from small independently owned outlets to a landscape dominated by large retail chains (Lu and Reardon, 2018), causing an imbalance in the power relationships within the supply chain (Hingley, 2005). Reardon and Timmer (2014) suggest ‘interlinked transformations’ are also taking place in the Global South that contribute to the grocery retail shift. Diets are shifting more towards the Global North model in the Global South with increased consumption of processed food and higher demand for meat (Gómez and Ricketts, 2013; Reardon and Timmer, 2014). Supermarkets may inadvertently decrease the consumption of traditional healthy foods as they make processed food more available financially and spatially (Wertheim-Heck *et al.* , 2019). The urban context exacerbates the

significance of access, as urban dwellers are net food buyers (Kimani-Murage *et al.* , 2014). Financial capability and the spatial distribution of food retail outlets are therefore deciding factors in who is food secure and who is not.

Urbanization also changes the dynamic as people shift from subsistence farming and lower food expenditure in rural areas to market dependency in cities (Smit, 2016). The post-farm segment of the supply chain, i.e. the middle between production and consumption that includes logistics and retail, has been transformed due to liberalization of trade and globalization. This ties in closely with urbanization, as the supply chains in the Global South are generally rural-urban, and many activities in the middle take place in urban areas, as well as incur 50-70% of costs for urban consumers. Modernization and centralization of food supply chains can reduce these costs and decrease instability of supply (Reardon and Timmer, 2014). On the one hand this has improved product selection for urban consumers, provided higher standards of food safety and hygiene, and offered lower prices for the same goods as micro or independent retailers (Reardon and Minten, 2011). On the other hand, due to customer segmentation on a demographic and supply basis (Hollywood *et al.* , 2007), the urban poor are often left under served by the supermarket sector, while the traditional micro retailers are being pushed out of their businesses (Berger and van Helvoirt, 2018).

Supermarkets are focussing in areas where the demographic is wealthier, and the few outlets that are spatially accessible to poorer urbanites have limited selections of produce (Battersby and Peyton, 2014). Therefore, informal retail sector and micro retailers are still a relevant part of food shopping in the Global South and poor urban neighbourhoods and fill gaps left by supermarkets (Nandonde and Kuada, 2016). Micro retailers are located within easy reach, provide a social backdrop for purchasing with for example credit systems and enable people to purchase food in smaller quantities than formal supermarkets might (Minten *et al.* , 2010; Nandonde and Kuada, 2016).

Large global retailers have been able to penetrate the Global South largely due to foreign direct investment and liberalization of trade (Nguyen *et al.* , 2013). However, they are not adapting to local grocery shopping habits and dynamics can lead to business failure (Amine and Tanfous, 2012). Further, there are distribution issues from large retailers through to consumers in marginal or poor neighbourhoods. Food retailers in the Global North streamlined their supply chains in the 1980s to improve operational efficiencies. They centralized distribution which has led to them controlling the retail food supply chain (Fernie and Grant, 2008). However, this power shift to supermarkets also created an imbalance in food supply chains affecting sources of supply and thus availability of choice for consumers (Hingley, 2005).

Solutions in the Global North proposed and implemented for consumer markets and the formal and informal retail sector include consumer-owned co-operatives, who offer differentiation and "*socially embedded local food supply and marketing that [large retailers] do not, or cannot fill*" (Hingley, 2010: 111), and 'super middlemen' who can be "*at the hub of triadic links between primary producer, middleman* [or wholesaler] *and retailer*" (Hingley, 2005:71) including micro retailers. Such solutions engender better food distribution not only for all forms of retailers but consumers as well, however their applications in the Global South have been limited.

Kalkanci *et al.* (2019) refer to 'inclusive innovation' in SCM as a way to increase social sustainability in an operational context. They specifically discuss food retail as an example of a field that would benefit from more inclusive SCM, distribution and retail networks, especially in terms of which customers to serve. However, the main hindrance to serving urban poor neighbourhoods is the perceived trade-off it presents with making a reasonable profit. In some contexts operating in lower income neighbourhoods could in fact prove to be quite lucrative if the grocery dynamics of a neighbourhood are known well enough.

2.4 Context of South Africa

South Africa has a well-developed agribusiness sector which provides a significant number of jobs and is the largest exporter in Africa (USDA, 2018). However, while South Africa produces enough food to feed all its citizens it has high levels of household food insecurity (Mushunje *et al.* , 2015). Food retail in South Africa is highly concentrated, five large chains (both domestic and international) dominate the market with some independent companies challenging in certain areas (Competition Commission, 2019). The USDA (2018), using Euromonitor data, estimated the food retail market to be worth almost $45 billion in 2017. They divide the sector into 'modern food retail', which consists of supermarkets of different sizes and convenience stores, and 'informal' or 'traditional' retail, which consists of 'spaza' shops (neighbourhood tuck shops discussed further in section 4.3) and other independent food retailers. While grocery retail modernization has been ongoing in South Africa for some time (Battersby and Peyton, 2014), traditional retail still holds its ground with 38 percent market share (USDA, 2018). Greenberg (2017) indicates that estimates of the number of traditional outlets run anywhere between 80,000 and 400,000, depending on which data one is looking at, which is a fivefold difference, exemplifying the heterogeneity and complexity of the sector.

Grocery retail in South Africa is highly divided among demographic segments including township dwellers as a separate segment. The townships are a remnant of South Africa's apartheid and represent one of the most prolific examples of racially based residential segregation in recent history. Despite formal abolishment of apartheid urban areas remain segregated according to race (McLennan *et al.* , 2016). Townships mostly inhabited by Black Africans dominate the outskirts of cities and pockets within them; shanty towns juxtaposed with gated communities symbolize the levels of inequality in a relatively small geographical area. Racial factors underlie inequality in South Africa, especially in urban areas where different groups live in proximity to one other (McLennan *et al.* , 2016).

While a food desert is a useful conceptualisation of the spatial nature of food insecurity, it is insufficient for a context as dynamic and complex as South Africa. Battersby and Crush (2014) suggest the concept be updated to reflect the complexity of the foodscapes people face in these contexts, where a supermarket is not a primary source of food and daily life is not confined to a single neighbourhood but encompasses long commutes and food shopping done enroute. As well, in urban South Africa TBM and related non-communicable diseases are increasing rapidly, particularly in areas where financial and spatial access to healthy food is limited (Battersby and McLachlan, 2013). However, food security agendas mostly focus on ensuring fundamental availability through increased agricultural production rather than e.g. strengthening distribution networks or supply chains (Battersby and Crush, 2014).

2.5 Research Questions

The background above highlights the complex and context dependant nature of urban food security research. SDGs 2 and 11 provide a broad platform to approach such issues from several angles and juxtaposing them with SCM is a novel approach to investigate food security. Our study thus has three specific research questions to address our objective to understand determinants impacting food access and security among South Africa's urban poor.

1. How do spatial and financial constraints influence consumer food shopping dynamics in an urban poor context?

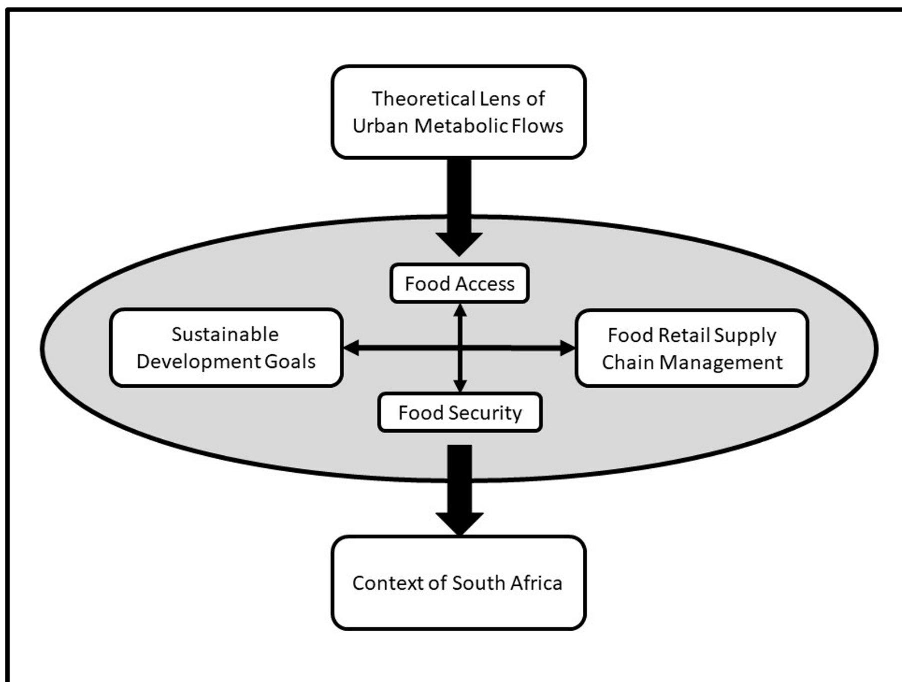
2. Which aspects of the triple burden of malnourishment represents the biggest challenges in this context?

3. How do these factors affect food retail SCM in this context and what are some potential solutions?

Figure 1 provides a conceptual framework for the exploratory empirical study undertaken. The inter-disciplinary concepts of the SDGs and

food retail SCM related to food access and security are investigated through the theoretical lens of urban metabolic flows in the context of South Africa. Due to little previous research in these areas for our investigation we selected an inductive, exploratory approach using a qualitative case study. We discuss our methodology and research methods in the next section.

Table 4 Conceptual framework for this study



3. RESEARCH METHODOLOGY AND METHODS

3.1 Urban Metabolic Flows as a Theoretical Framework

Holland (2014) suggests that an interdisciplinarity approach is better able to synthesize or integrate knowledge from different domains. We do so here with SCM as our recipient discipline for synthesis and development studies, specifically urban metabolic flows, as our referent discipline.

World-systems analysis divides global society into a 'core' and a 'periphery' based on their stage of development, power dynamics and dependence on one another for resources (Wallerstein, 1974). Within a food retail context, corporate retailers are the 'core', wielding centralized economic and political power and therefore dominating the market. The 'periphery', i.e. informal and traditional retailers that are abundant in an urban poor context, is fragmented and not organized around a central entity (Greenberg, 2017). This dynamic prevents the 'periphery' from developing to their full potential and thus traditional retailers are considered a backwards system, but at the same time, the 'core' views them as a threat to their business model. Adapting this perspective to the urban context brings forward socioeconomic flows that make up the urban environment by forming 'metabolisms' to contextualise the underlying factors that come together to form the urban context (Swyngedouw and Heynen, 2003).

Examining this context through these flows requires an interdisciplinary perspective and doing so for urban food security provides insight into why some neighbourhoods are marginalised as well as the parallel systems that form alongside formal supply chains to improve food access. From this perspective the formal and informal, or 'core' and 'periphery', retailers are parallel metabolisms of the same resource, food (Castán Broto *et al.* , 2012). As well, hunger and food insecurity are socially produced from the 'core' wielding perceived financial and social power over the 'periphery', dictating who gets to eat and what (Heynen, 2006). A lack of urban food security stems from unequal

distribution and governance of resources (Agyeman and McEntee, 2014) and requires reorganizing relationships within a city to achieve equal opportunity for all (Castán Broto *et al.* , 2012). Hence, we use urban metabolism and its flows as a theoretical lens to better understand food access and security in food retail supply chains of the urban poor.

3.2 Field Study Method

The data for this paper was collected in a city in the Western Cape of South Africa following a qualitative field study design (Burgess, 1984). Field studies use observational approaches to conduct social research in a circumscribed environment and is primarily used to understand phenomena and why certain processes occur or do not occur. This is usually achieved through multiple data sources such as primary data comprising interviews and observations and secondary data from desk research or documents (Burgess, 1984).

South Africa is an appropriate context for urban food security research as townships dominate the urban landscape and give inequalities a concrete spatialization. Sampling of interviewees was a combination of purposive and convenience. Township residents were the purposive core of data, but convenience dictated which township and residents were able to participate. Access to the township was gained through collaboration with a non-governmental organization (NGO) which was invaluable as moving around the neighbourhood would have been impossible without local knowledge and guidance due to security issues and high crime rates. Language was another issue as interviews were conducted in English by the research team, but many interviewees spoke Xhosa (the number two language in South Africa after Zulu) and a translator, also an academic, was present to ensure translation rigour.

There are four different types of grocery outlets used by interviewees in the township. First, the small independent and mostly informal neighbourhood tuckshops, or spazas, were a significant source. According to observations during the transit walks through the neighbourhood and as stated by the interviewees, there are numerous

spazas in the neighbourhood, which makes accessing them easy as they are located near residential clusters. Second, a formal supermarket is located at the edge of the township in a small shopping centre. The store is a low-income targeted branch of a large grocery retail group which must remain anonymous for confidentiality reasons. The retailer describes these branches as offering bare-bones necessities for extremely competitive prices. It offers mostly dry, frozen, and canned goods, as well as household items such as cleaning supplies. Its location is convenient in the sense that it is located near transport links and walking distance from a lot of the township. However, as the neighbourhood is on a hill, those living at the top have a long climb. There are no internal public transport systems in the neighbourhood, only into nearby towns via the taxis and the train.

Third, the shopping centre also consists of a separate butcher shop, which is widely used. The butcher shop is part of a meat wholesaler chain and enables people to purchase smaller quantities of fresh meat, rather than larger bags of frozen meat. We were unable to interview a representative of the butcher shop. Finally, the larger supermarkets owned by the same group in the nearby town are used to some degree, especially by those who work there. The town is about two kilometres from the township, making it a long walk there and back. Many interviewees carefully consider when it is worth it to make the trip and incur related transport costs.

3.3 Data Collection

Fifty-nine interviews were conducted among residents (RES), NGO beneficiaries (BEN), retail experts (RET), and social workers (SOC) were conducted in a small township about an hour outside of Cape Town. For confidentiality and anonymity reasons we cannot name the specific township. Table 1 provides summary details of the interviewees.

Table 1 Summary of interviewees

Interviewee group	Acronym	Characteristics
Township residents	RES 1-24	Living in township, with income
NGO beneficiaries	BEN 1-25	Unemployed women
Retail experts	RET 1-3	Corporate manager, grocery chain
	RET 4	Store manager, grocery chain
	RET 5	Grocery supply chain expert
	RET 6	Spaza owner in township
Social workers	SOC 1	Dietician
	SOC 2	Health worker
	SOC 3	Livelihoods consultant
	SOC 4	Independent social worker
Total interviews	**59**	

All interviewees had relevant tacit knowledge and practical experience and each interview lasted between 30 minutes to over an hour, but in some instances additional time was used for observations in the township, retail outlet or distribution centre. Robinson (2014) suggests a four-point approach to qualitative sampling, which was followed in this research. First it was imperative to define criteria on whom to include and exclude in the sampling, followed by establishing a sample size. Sample size was determined through what is ideal, and what is feasible or practical (Robinson, 2014). Third, the inclusions criteria, i.e. BEN, RES, RET and SOC, were established. The goal was to interview as many representatives for each group as possible within the available resources and hence a convenience sampling approached was used. Finally, the recruitment of the interviewees took place with sourcing done through the NGO and other local contacts. This process ensured a rigorous and robust approach to sampling and while the

sample consists of individuals in one township it is appropriate for this exploratory study and respondents are considered quite representative of residents in all townships.

Out of the six retail (RET) interviewees, four were employed in the same retail group, one of the largest in South Africa with operations across the African Continent. Three (RET1-3) worked in managerial positions while the fourth (RET4) was a store manager in one of the outlets. RET5 is employed elsewhere in retail but has extensive knowledge of food retail supply chains in South Africa.

The sixth (RET6) was a spaza shop owner in the township. The spaza owners were a challenging group to gain access to, as many of them were from outside of South Africa and unwilling to talk to an outside researcher. RET6 is local and familiar with the representatives of the NGO and was therefore approachable. Many attempts were made to engage with other spaza owners but to no avail. This is a shortcoming in the study, but within the time frame and resources available during data collection it proved infeasible to obtain additional interviewees.

Resident (RES) interviews took place during walks in the township. The NGO staff always approached the residents to ask for interviews regardless of whether they spoke English or not, as an outside researcher would not have had much success doing so. The township was also a challenging backdrop for an outside researcher to gather data due to cultural differences and racial tensions in South Africa. Thus, many resident interviews came from chance encounters on the streets, which is a convenience sample that adds diversity to the interviews.

The BEN group is comprised of beneficiaries of the collaborating NGO and are all unemployed women. The NGO conducts semi-annual check-ups in the schools around the area, weighing and measuring children for signs of malnourishment. They then meet with the families and invite them to their programs. The BEN interviews were done during such programs at the NGO premises. Social workers (SOC1-3) work for the NGO in the township to assist people with food parcels, job

searches and different educational workshops. The NGO's core is the school food program to assist children in primary schools who exhibit signs of malnourishment. SOC4 is an independent social worker with various projects around the township.

3.4 Data Analysis and Validity

Data analysis was conducted following the iterative cycle of Miles *et al.* (2014) for qualitative data. Data were transcribed and coded into categories using NVivo 12 software. The categories were then analysed and discussed among the research team to identify any discrepancies. This process enhanced inter-rater reliability and data credibility and enabled development of a refined set of categories around issues of food security and access, health, and poverty. Finally, selective coding cross referenced and combined codes to yield eight emergent themes that informed findings. We assessed qualitative research quality in SCM using 'trustworthiness' criteria consisting of credibility, transferability, dependability and confirmability (Halldórsson and Aastrup, 2003). Table 2 summarises the actions taken to address them and as a result we believe the analysis and findings are trustworthy.

Table 2 Summary of actions taken to ensure research rigor

Measure	Purpose	Action taken
Confirmability	Assurance of the integrity of the findings based on data (interpretations, constructions, assertions, facts etc.)	Data collected from relevant responders with tacit and active knowledge of grocery retail in South Africa
Credibility	Matching constructed realities of respondents to those presented by the evaluator	Multiple respondent types as data sources were used to triangulate emergent findings
Dependability	Trackable variance and transparency	NVIVO 12 software used for coding Interview quotations provided Coding scheme is elaborated Open, axial and selective codes used to present findings
Transferability	Specifying the context of scope in which research findings can be generalized	Case study research process Sampling of consumers and suppliers in sector of study

4. FINDINGS

This section has five subsections, the first consists of a discussion and table of eight emerging themes. The second relates those themes to SDGs 2 and 11, while the remaining three discuss main findings related to each research question.

4.1 Themes Emerging from Findings

Table 3 presents eight central themes emerging from the findings with demonstrative key words for each of the four interviewee groups. The first theme concerns food prices and people's shopping habits through comparing prices from different outlets and the general prices of products. The second surrounds facilities for cooking and storing food and general living conditions. An important third theme is security and personal safety in the townships as there is abundant violence both domestically and on the streets. The fourth is the habit of buying a bundle of goods, referred to as a hamper, which is very common in the townships and therefore a central theme. Hampers as well as many other necessities are bought in neighbourhood spaza shops, the fifth theme and central element in township grocery dynamics. Theme six, supermarkets, are gaining relevancy in township grocery shopping as more retail chains are realising thus market potential. The last two themes are fresh produce encompassing meat and vegetables and health, particularly nutrition and diet related noncommunicable diseases.

Table 3 Emergent themes from analysis

Theme	BEN	RES	RET	SOC
Food price	Specials, price comparison, saving money	Specials, price and store comparison	Price competition between chains	Lack of affordable nutritious food
Facilities	Lack of storage, no electricity, paraffin stove	Fridge, cooking facilities	Unawareness of township living conditions	Shared hygiene facilities, electricity
Security	Robbery, unwillingness to go out at night	Safety of children, high crime rates	Hesitancy to entering township	Domestic violence, violent crime on the streets
Hampers	Dry staples, long shelf-life vegetables	Dry staples, long shelf-life vegetables	Essential commodities, festive season	Inexpensive staples, low nutrition
Spaza shops	Convenient location, lack of trust in quality	Convenient location, lack of trust in quality	Individual small items, hamper	Business acumen of owners
Supermarkets	Distance, trust in quality	Loyalty bonuses, quality comparison	Segmented marketing	Lack of product diversity
Fresh produce	Inadequate supply in township, unaffordable	From bigger supermarkets in town	Varying infrastructure for fresh produce across stores	Quality of meat and vegetables, lack of nutrition
Health	Non-communicable diseases, malnourishment in children	Non-communicable diseases, malnourishment in children	Marketing affordable healthy food	Nutritional education, lack of access to affordable healthy food

4.2 Relationship to SDGs 2 and 11

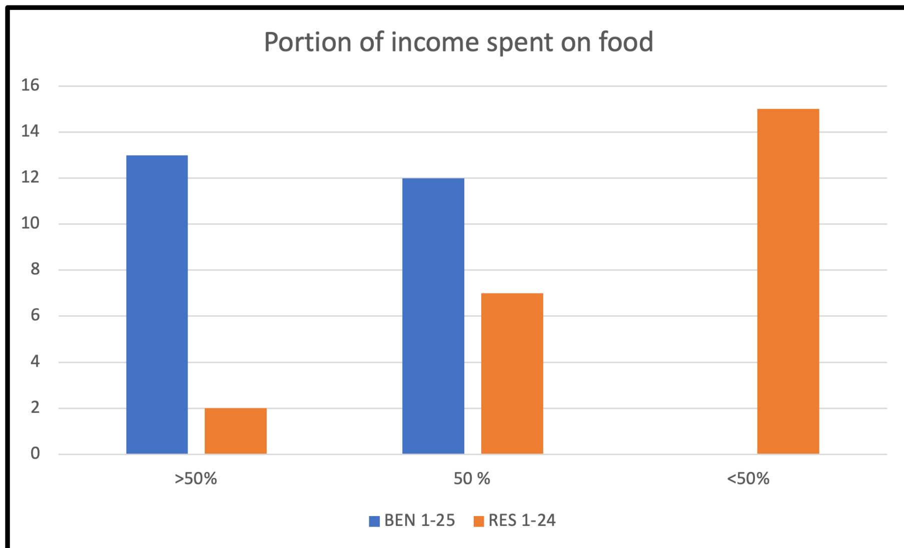
SDG2 and 11 are central for this research as urban food security is concerned with equal availability and access to food for all urban citizens. Further, the TBM concept is important as obesity and micronutrient deficiencies are just as than under nourishment (Goméz and Ricketts, 2013). The food supply chain is thus a crucial factor for urban citizens dependent on the food market and this places pressure on retailers to supply food according to preference and nutritional needs to avoid the TBM. The themes found in our analysis support a more holistic approach to SDG2.

Many urban poor communities, such as this study South African's township, are informal and therefore lacking in basic services (Fox, 2014). Making cities more liveable through better access to food outlets, electricity and clean water are crucial elements to improve urban food security within SDG11. Issues of spatial constraints and reliable food outlets and basic necessities such as electricity were recurring interview themes as was general security in the township. Liveable cities include safe access to groceries for everyone, including women and children. Building safer communities would encourage businesses to include poor urban neighbourhoods in their locations, as security threats would no longer be an inhibiting factor.

4.3 RQ1: Financial and spatial constraints to food access

Since food is accessed through the market in the township, household food security correlates with the household's financial entitlements. Township residents are divided into two groups based on their financial situation. The BEN group (n=25) are beneficiaries of the collaborating NGO while the RES group (n=24) have some form of income. Food is a major expenditure for both groups, but every BEN respondent spends at least half of their income on food every month as shown in Figure 2. Sources of incomes vary as eight in the BEN group do not receive government grants due to being foreign nationals or otherwise ineligible and rely on assistance from family or friends. Fifteen out of 24 in the RES group spend less than half of their income on food, while the rest spend half or more. Financial constraints are therefore in important indicator as any sudden changes to a household's income could significantly alter food security.

Table 4 Income differences between BEN and RES respondents



Shopping habits among both groups varied very little. Supermarkets and spaza shops were the most popular outlets. From a spatial accessibility point of view, spazas are located more conveniently in areas where people live in the township. Spaza shops are generally informal and unregulated, private businesses run mostly by immigrants from e.g. Somalia. Thus, the financial and spatial accessibility of spazas was paramount to anything else. Due in part to their unregulated nature, they address the needs of township dwellers in a much more flexible manner (Greenberg, 2017). However, accountability for the quality of the goods in the spazas fall solely on the individual shop and experiences with those differed. Most of the time customers can get a refund or a replacement after complaining, but one interviewee for example referred to spazas selling faulty goods to children on purpose. For example, "*...the thing is I love to buy and support the spazas around us, but the thing is the food that they were selling is not good for us. So, I would like to take the shops that we are using* [like the local supermarket] *to be closer to us because they are selling fresh food*" (RES7). This was an almost unanimous concern among

both respondent groups, the quality of the produce spazas sold was inconsistent at best, dangerously unhygienic at worst. Insufficient infrastructure is partly to blame, some of the spazas are located within shacks in areas with no electricity. These shops mostly sell unperishable goods, but those with better equipment sell fresh produce as well.

The spaza owner interviewed for this study (RET6) stocks her shop with dry goods once a month but replenishes fresh goods every week, more often in the hot months if necessary. Spaza owners use wholesale companies for their goods, some of them deliver to the shop if necessary or one can go and pick up at the wholesaler. RET6 uses a delivery service for her shop. Many of the foreign spaza owners cooperate regarding their orders, which allows them to benefit from economies of scale and cut costs on delivery/transport. Reminiscent of food retail cooperatives, such an arrangement would benefit all spaza owners but would require elements of trust and cooperation among competing businesses (Hingley, 2010). There was respect for the way the foreign spaza owners run their businesses, with SOC3 encouraging the beneficiaries to familiarise themselves with their business acumen. Research on the spaza dynamics is difficult as owners are cautious in talking to people due to xenophobic attitudes they have encountered.

A common monthly food shopping pattern is buying a 'hamper' or a 'combo' of staple products in the spaza shop and topping it up with vegetables, meat and canned goods from the supermarket or a specialty shop, such as a butcher. For example, BEN8 noted "*…the spaza shops* [has] *this hamper that has 10kg [packages] of groceries so we only buy that hamper and then the other small necessities we buy from the supermarket"*. Hamper size increases the importance of the spazas located close to where people live. Interestingly, the corporate managers (RET 1-4) had rather limited knowledge about the hampers, even though they are an integral part of the township food dynamic.

Supermarkets have become increasingly relevant for the township's food dynamics and relied upon for consistency of quality and product availability (Battersby and Peyton, 2014). For example, "*…I prefer*

shopping in town because they are never short of anything like in spaza shops where you would try buying something and find that they do not have it" (BEN16). The township studied has a small shopping centre along the main road close to the train station. Respondents relied more on the small supermarket there, but larger supermarkets in the nearby town centre were also used mostly by people who worked in town and shopped during their commute. Supermarkets in town were spatially inconvenient for many interviewees due to distance and transport costs. Even the township's own supermarket was hard to reach for some as it is located at the bottom of the hill the township is spread over. There is public transport available to nearby towns and cities, but very little within the township itself which also increases the significance of local spazas.

From a world systems and urban metabolic perspective, the spaza shops represent the 'periphery' or 'parallel metabolism' (Castán Broto *et al.* , 2012, Greenberg, 2017). They are juxtaposed with formal retail, or the 'core', providing services where formal flows do not reach. As the spazas are such an integral part of the township dynamic, despite their quality issues, this would indicate inequalities in the distribution of resources within the city (Heynen, 2006). Spatial and financial constraints are household specific, but at the same time stem from deeper societal structures, such as the legacy of apartheid that facilitates the continuing social and spatial segregation (McLennan *et al.* , 2016).

4.4 RQ2: Triple burden of malnutrition

South Africa in general suffers from high levels of malnourishment and micronutrient deficiencies and obesity are on the rise (Battersby and McLachlan, 2013). Foods containing high calories but few nutrients such as margarine, sugar, and cookies are cheaper to purchase than fresh produce and therefore a relevant part of the township dwellers' diet. The NGO measures malnourishment among the children of the township, which manifests in physical symptoms such as stunted growth and underweight. For example, "*...people don't have money so they purchase what they can afford and what they can afford is*

carbohydrate. That's why you have obesity rising" (SOC1).

Among adults, non-communicable diseases relate to lack of dietary diversity, such as diabetes, are common (Battersby and McLachlan, 2013). Many health issues faced by the urban poor derive from the lack of diversity in their diets which mostly consists of starchy staples but very few fresh vegetables or protein sources. The lack of financial access is a factor, but also knowledge about what constitutes a healthy meal is limited. Most townships dwellers rely on the hampers as their nutritional base, potentially supplemented with fresh produce such as meat or vegetables. For many it is a choice between the two. For example, "*...because of the money some would have that hamper and just buy maybe meat"* (SOC2). While many would like to eat more fresh produce "*...healthy food is so expensive and then unhealthy food is so cheap*" (SOC1).

The hamper concept has not spread to most supermarkets but one supermarket chain in town offers a vegetable combo, comparable to the staple goods hamper, on a certain date each month. The vegetables in the combo are ones with long shelf life, such as potatoes, onions, and carrots, since these are easier to store with limited or no refrigerator space. A majority of BEN and RES interviewees made the effort to go into town on the specific date the combo was available. For many this was the only vegetable element in their diet, so its significance is notable. Vegetables were considered too pricey or unavailable in the local supermarket.

The cycle of unhealthy, starchy foods dominating as sources of nutrition not only originates from the demand side, but the supply side as well. The NGO gives out a food parcel for beneficiaries participating in their programs. The contents of the parcel are donated by a large food brand and the NGO has little, if any, say in the nutritional profile of the parcel, which is predominantly made up of carbohydrates. As a result, "*...this food parcel was made by a nutritionist in Johannesburg who just decided this is what's healthy*" (SOC1). For many beneficiaries, the food parcel is the only source of food in a month which means

interfering in the donor's offering could lead to an impossible choice. "*You choose, either you have obese mums, or you have hungry mums. You take a pick. And I'm sitting here and I'm thinking what can I do, there's nothing I can do!*" (SOC1).

Interviews with the retail experts point in a similar direction. "*…in their marketing they will talk about that they want to make sure that health is affordable. But back at the ranch it's a cut-throat, to a large extent an adversarial type environment" (RET5). Starchy carbohydrates have demand, so it makes financial sense for companies to keep selling them, even if they wish to focus on consumer health. "What should be and what it is aren't necessarily the same thing… it's about rand and cents and their own profitability. I don't necessarily believe that there is a significant focus on doing what is right. It's about shareholder value, it's about growing market share"* (RET5). Thus, for food supply it is the demographic division that dictates what is on offer and for whom and even though most supermarket chains in South Africa are locally owned they operate with a large global retailer mind-set.

Residential segregation that still dominates society in South Africa has connotations that go beyond physical location (McLennan *et al.* , 2016). Many township dwellers have come from elsewhere in South Africa, leaving their homes and extended families to come look for work. Only four of the 49 interviewees were born in the township, while six came from Zimbabwe and one person from Swaziland. The language of apartheid is still used when discussing origins, 'homelands' was a term often used. Those originally from South African were from the Eastern Cape, where the Xhosa tribe was segregated to during the apartheid years. "*There isn't a broader world picture in [the township]. And that's due to poverty and dislocation of people. If you come from poverty, you're going to be stuck in poverty… the rest of your life"* (SOC3). While in principle there is free mobility and equal rights within the country, it is limited in practice.

According to SOC1 it is very difficult to coach people about eating, not to mention attempting to shift entire cultural paradigms. Comforting,

familiar foods bring some ease into people's lives. Convincing someone to give up sugar, a simple everyday luxury, for health's sake is difficult. "*...That frustration of, everything else is just so bad that, and food for many is a comfort*" (SOC1). The health implications are a fair exchange for a few moments of joy.

Healthy protein sources and adequate fresh vegetables were beyond the reach of most respondents, and sugar consumption is extremely high. When interviewees were asked what they would like to eat if they could eat anything, the most common answer was fresh vegetables and meat. For many respondents, especially the BEN, the only food source is the hamper and food parcel from the NGO. The food parcel is slightly healthier than the hamper as it also contains oats, beans, canned fish, peanut butter and a soup mix which all contain protein. The parcel has been put together by a dietician however with respect to donor wishes and product availability.

Many interviewees discussed health issues such as high blood pressure and weight problems likely linked to the high starch, low protein diet. As demonstrated by a wish to eat more vegetables and meat there is some awareness about the lack of dietary diversity but little opportunity for action. This awareness is manifested by their wish for better quality food to be available in the townships so healthier options and fresh produce would be more accessible. The hampers potentially provide an avenue to improve the quality of the food people eat. The starchy staple contents of the hamper are very ingrained in the societal psyche of people living in townships due to deep historical roots. Eliciting change in this mind set would require a cultural overhaul and would also require extensive empirical research on hampers and the staples of the South African diet.

4.5 RQ3: Retail supply chain considerations and potential solutions

Global North studies on food deserts focus heavily on supermarkets and the lack of food access, i.e. on-shelf availability (Fernie and

Grant, 2008). In a South African township context, the variety of food outlets is more complex as is the diversity of inhabitants. The spatial conceptualisation of a food desert is a useful starting off point, encompassing the scarcity of retail outlets and residential segregation on a general level, but disregards the fluid dynamics of many people's daily lives (Battersby, 2012). The BEN and RES interviewees represent the diversity of township dwellers: backgrounds ranged from lower middle-class local government employees to undocumented immigrant single parents. Therefore, even though there was a factor of spatial proximity it did not characterise the entire neighbourhood as a conventional, Global North-style food desert (Wrigley, 2002).

Many of the RES group leave the township daily for work and hence are not bound to the local grocery outlets, while the BEN group relies heavily on outlets within the township. These kinds of dynamics are often missed through a top-down approach, where formal retailers group township dwellers into one homogenous group purely on their demographic. "*…We hear [things] from out in the industry, but we don't actually know. What are the food patterns and how do they change?"* (RET3). The most recent policy on food and nutrition security in South Africa is from 2014 (Anon., 2014) and contains a separate section on challenges that inhibit nation wide food security. These challenges include inadequate safety nets for those unable to meet their nutritional needs as well as lack of information and knowledge on healthy and sustainable diets. The findings in this paper's study support these notions and add the perspective and role of the retail sector in helping to provide such food security.

Battersby and Crush (2014) suggest moulding the food desert concept to fit the modern, fluid African city perspective and our findings support this notion. There are plenty of outlets, spaza shops as well as low-end supermarkets, but the entitlements of the inhabitants are lacking as well as the product quality available. The diversity of the township demographic requires the household to be central unit of analysis in a South African food desert. Food security levels vary substantially among households, due to e.g. income and employment. Historical

legacies of apartheid-era residential segregation continue to strongly influence who lives where, therefore townships have varying levels of income from the very poor to middle class.

A strong demographic division permeates the South African retail market, i.e. "*...the* [grocery] *group has a targeted approach in branding for these stores*" (RET1). This targeting has significant implications regarding store locations, which in turn affects the access to different products (Hingley, 2005). From a consumer perspective, those unable to leave their neighbourhoods have limited access to a diverse range of products. The grocery group has three different types of outlets. A high-end supermarket targeting the wealthier demographic sells imported items, perishables, and a much wider selection of brands. Most of South Africa, i.e. the growing middle class, are covered by another brand, where the selection is less luxurious but still relatively varied. The stores that target the lowest end of the echelon gear their selection toward staples such as 'millie' meal, flour, rice, sugar and cooking oil, most of them store brands. The residential segregation that dominates the urban landscape in South Africa is the defining factor in the location of the different types of outlets. The high-end supermarkets are easily reachable by private vehicle, located around wealthy neighbourhoods and commercial zones, whereas the lower-end ones are near townships and lower middle-class neighbourhoods.

Comparing the average baskets bought at the different outlets the difference is significant, R80 (≈€4.70) at the low-end store and R150 (≈€8.80) at the higher end. *"...*[People] *are accustomed to a certain quality, and for that you are willing to pay a certain premium. Now we can't expect someone from* [the township] *to buy that kind of product. It's not discrimination, but you've got to be real"* (RET2). This indicates average basket differences do not derive merely from the quantity of products that people buy, but significantly also the quality. This correlates with statements from SOC1 regarding starchy staples. A redefined food desert concept needs to include the differences in quality of food purchased from a financial, spatial as well as a cultural perspective, making it more complex but also more comprehensive.

Previously, formal retailers have been moving into the townships with their regular concepts, but some are trying a more flexible, spaza like-concept in a few townships around the country consisting of small, mobile stores placed into harder to reach areas in the townships selling the same products as the permanent supermarkets (Mathe, 2019). While a positive development it does encroach upon individual entrepreneurs' livelihoods. However, because it is a formal retailer the quality of products it sells are more reliable and this is appreciated by the residents.

Being more aware of urban poor dynamics in retail planning could prove lucrative for businesses, as well as involve townships in supply chains in a more comprehensive manner (Nandonde and Kuada, 2016). Financial constraints on the demand side notwithstanding, the poorer demographic represents *"...the real bulk of the income"* (RET2) in South Africa. The high-end supermarkets are there to appease the wealthier demographic but are not financially most valuable. This could manifest in the South African grocery market through an increase of formal retail outlets in townships. However, retailer interviews indicated the townships were not a familiar context for them, but there is interest. *"...In South Africa... if you can follow the buying patterns of the lower end of the market, if there is data available, if you can stay on top of that, you can run a very smart business"* (RET3).

The township where this study was conducted did not have its own formal supermarket until a decade ago and the traditional way of food shopping, i.e. specialty shops for meat, dry goods and fresh produce, were the principal sources. However, that landscape has changed as *"...retail, formal retail as we know it have gone into [the townships] ...and have challenged those what we call down the street sales significantly"* (RET5). The lucrativeness of the lower demographic is due to volume. *"It is not primarily or necessarily geared towards the needs of people because that's the right thing to do... but because it is a significant opportunity"* (RET5). While the dissemination of supermarkets into the townships may have increased the diversity of products on offer, it has not seemingly improved access to better

nutrition for township dwellers, nor is that the goal of the food chains. Lack of data on township dynamics, stemming from historical and political flows e.g. continuing social segregation are a hindrance to data availability and expansion to these contexts, as are the high crime rates in the townships. However, the interest is financial, i.e. improving nutritional access is not the objective but expanding the customer base and increasing profits.

CONCLUSIONS

Our study contributes theoretically in several ways. First, it simultaneously considers the SDGs and SCM and development literature through an interdisciplinary approach, theoretically influenced by urban metabolism. Findings evidence that societal factors play a significant role in food distribution for the urban poor, both from a spatial perspective of retail outlet location and from a nutritional standpoint. Constraints to accessing adequate nutrition faced by township residents are substantial, and many of them are deeply rooted in historical and economic metabolic flows. The division of society in South Africa is severe, and this has implications in food retail as well.

Second, SSCM research has focused on the environmental aspects of sustainability, leaving the social side somewhat under-researched. Urban food security encompasses numerous social aspects as well as having strong supply chain elements. Food security discourse, for example the SDGs, often discusses food production on the one hand and consumption and nutritional figures on the other. While these are useful and important factors in food security, the supply chain from production to nutritional factors is absent from the discussion. Urban dwellers are dependent on the market for their nutrition, putting grocery retail in a relevant role. There are however significant differences in access to the market, both financially and spatially, deriving from underlying social factors and this research has highlighted these challenges for SCM.

The use of urban metabolic flows juxtaposed with food SCM and retail distribution have thirdly provided insight into social factors and how residential segregation and historical aspects are related to food security and access. When those flows are better understood, SCM is a tool to improve food access for the marginalized communities through location of retail outlets and the diversity of products available.

The triple burden of malnutrition, encompassing undernutrition, micronutrient deficiency and obesity, is closely associated with access, especially in an urban environment. Complete lack of access leads to undernutrition, or even starvation. Micronutrient deficiency and obesity on the other hand are consequences of lack of entitlements to purchase nutritious food, as heavily processed starches tend to be less expensive than fresh produce. This contributes fourthly by highlighting the need to include access issues in food security research and global agreements such as the SDGs. SSCM is a perspective, which can holistically include social factors in practical approaches to nutrition and grocery retail in challenging contexts.

Consumer research in South African townships is difficult and time consuming due to security concerns and language barriers. The lower demographics however represent a huge and lucrative market in South Africa so understanding township and other low demographic neighbourhood grocery dynamics is also beneficial from a business perspective. The significance of monthly hampers and spaza shops, as well as the systematic and diligent manner people in townships conduct their grocery shopping are insights formal grocery chains could use in expanding their business model into townships. While the exploratory manner of this study does not produce any quantitative or 'hard' measures, it fifthly contributes by providing a point of departure and factors which to investigate with further research.

Sixth and last, this paper, combined with other and studies done in townships and similar contexts, provides valuable insight into the dynamics of food shopping and eating in these areas. This bridges a research gap in urban food security studies, promotes interdisciplinary

research in SCM, and highlighted the importance of the urban context in development policy and planning.

Practically, the study provides guidance for food retailers and policy makers to include nutritional guidelines in their distribution planning, as well as the dynamics of the diverse neighbourhoods that exist in modern cities. Supermarkets are clearly positioned for different demographics, not just in terms of location but also diversity of products they sell. Supermarkets located near townships and other poor areas have significantly smaller selections of e.g. fresh produce, limiting nutritional options for those dependent on these outlets. While there are other outlets available to the township dwellers, such as spaza shops located within them, options remain limited due to storage issues, financial constraints and questions of quality and hygiene. Thus, there may be a role for further cooperative development (Hingley, 2010) for residents to help lift themselves up or a hybrid solution such Hingley's (2005) 'super middlemen' who could provide better quality products to the spaza shops.

Township dwellers included in this study had very specific shopping patterns that also warrant attention from food retailers. The lower South African demographics are the largest segment in the country, ergo being familiar with their habits makes business sense as well. The common practice of buying a hamper of staple goods once a month largely determines the starchy basis of the diet, with additional fresh produce purchases complementing the nutritional profile. Not everyone is able to make these additional purchases, in fact some could not even afford the hamper and are dependent on NGO food assistance. The starchy diet leads to many health issues, such as diabetes and obesity, but when the alternative is starving, it is an obvious choice.

For policy makers, this study indicates an ongoing public health crisis within townships deriving from inadequate nutrition. Interdisciplinary planning and action are required to combat this crisis. Food insecurity in South Africa is rooted in the townships, where people live in precarious circumstances, often without electricity or running water

in their homes. Distribution networks are improving for the urban poor from the formal retail side, but nutritional deficiencies are very difficult to address due lack of knowledge about eating healthy and cultural aspects. Addressing these deficiencies through improved and inclusive SCM, accounting for societal structures and shortcomings, could provide a gateway solution for this humanitarian issue.

As with all research there are some limitations. Qualitative data were derived solely in one township of South Africa and thus there is limited generalizability to other contexts. However, by providing empirical foundations in a specific context, this study should inform and motivate further research on the challenges of urban food security and access. To do so, future research could inter alia verify these findings in a larger sample across this and other contexts, i.e. adopt a cross-country perspective, particularly incorporating Global South countries where the issues investigated in this study predominate. Further, a mixed-method approach could be used to enhance generalisability of findings to specific countries or regions.

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APPENDIX 5

Essay 3

This essay is currently in preparation for submission to *British Food Journal*

Are Changing Retail Supply Chains Impacting Food Security and Access in Urban Poor Neighbourhoods of Bangkok?

ABSTRACT

Purpose: Research investigates the impact of changes in retail food supply chains on residents in urban poor neighbourhoods of Bangkok.

Design/Methodology/Approach: Exploratory study comprised 30 semi-structured interviews in three Bangkok urban poor neighbourhoods. Data were recorded, transcribed and translated, and coded using NVivo 12. Codes provided inventory of topics categorized and patterned to derive three major themes: financial, nutritional, and societal.

Findings: Residents rely on traditional Thai food retail supply chains of wet markets, street stalls and vendors, and micro-retailers as major sources of available and nutritious food. Interviewees reported large supermarkets are more expensive, which inhibits food security and choice. Large supermarket supply chain and market penetration strategies appear to marginalise these residents.

Originality: Study contributes to development studies and retail food distribution in the context of emerging research related to sustainability and social activism in supply chain management and challenges current usage of Base of the Pyramid concepts regarding societal development.

Research Limitations/Implications: Study is interdisciplinary combining development studies and retail food supply chain

management to enhance discourse in socially sustainable food retail supply chains, food policy and planning by various stakeholders, and demonstrates the value of such research.
Practical Implications: Traditional, informal Thai food retail supply chains respond better than formal supermarket networks to urban poor neighbourhood dynamics suggesting the development of hybrid, collaborative models for retail food distribution.

Social Implications: Modern retail food distribution can provide better security and access to food for residents by including traditional retail food distribution sources. Study contributes to the UN Sustainable Development Goals numbers 2: Zero Hunger and 11: Liveable Cities.

Key words: Retail food distribution, urban political ecology, food access and security, Thailand

INTRODUCTION

Research into the base of the pyramid (BoP) in society and supply chains is a recent but burgeoning phenomenon in the literature. The size of BoP markets is substantial across the globe, however modern supply chains and management techniques developed in Western societies struggle to meet this market segment's basic needs in non-Western societies, including secure access to safe and nutritional food.

Prior research has focussed on rural communities where lack of food distribution, retailers and related supply chains is quite evident (Crush and Frayne, 2011). However, residents of poor urban neighbourhoods, who may or may not be 'members' of the BoP, are not a central demographic in food retail research, despite making up a significant consumer group, as they are less visible, and researchers and practitioners may consider this group well-served.

Internationally, retail food chains are usually managed from Global North[4] contexts and accustomed to more homogenous consumer

bases. Thus, specific consumer needs and dynamics of poor urban neighbourhoods in Global South contexts, where food access and security are needed, are often disregarded. Some contexts appear to be thriving such as Bangkok in Thailand, which is famous for its culinary, particularly street food, scene. Tourists flock to the streets in the evenings and stand in line for famous Thai dishes, regardless of the heat and traffic.

However, receiving less attention is the significance of traditional Thai food retailers, i.e. street food vendors, micro-retailers or 'mom and pop' shops, and wet markets for citizens of Bangkok such as office workers, taxi drivers, nurses, etc. Further, when venturing into poorer neighbourhoods and slums this significance increases substantially. To limit traditional retail modes such as street food stalls to a tourist attraction further marginalises the residents of these neighbourhoods and decreases food security.

As the formal food retail sector, led by global large retailers (GLRs), gains a firmer hold on food shopping in Thailand, the demographic dependent on the traditional sector of street food vendors and wet markets is left behind. In addition to this shift in the retail dynamic, the city of Bangkok is inhibiting street food vendors by posing severe restrictions in areas where street vending is allowed (Nirathron and Yasmeen, 2019).

This paper reports an exploratory and qualitative study into issues of food security for poorer demographic residents in Bangkok with a research objective of understanding how and where they source food, whether such sourcing provides access and food security, and how methods of current retail food distribution and increasing food retail modernisation impact the purchasing and nutritional needs of these residents.

4

The term Global North is widely used in development literature and refers to contexts in Europe, North America, and Australia & New Zealand, while the Global South refers to all other contexts (Dados and Connell, 2012). We have adopted these terms for this paper.

The paper's approach is interdisciplinary, combining theories from urban development studies, particularly urban political ecology (UPE), and food retail supply chain management to gain a perspective on underlying factors influencing urban food access and security. Besides addressing the research objective, this paper also responds to call to actions for more social activism as well as interpretive approaches in supply chain management (SCM) research. The research contributes to a better understanding of these issues in accordance with the United Nation's Sustainable Development Goals numbers 2: Zero Hunger and 11: Liveable Cities.

The paper is structured as follows. Background literature including theoretical perspectives of UPE and food retail SCM are provided next. Then, the methodology and research design for the empirical study carried out in Bangkok are presented, followed by findings and discussion sections. The paper concludes by noting contributions and avenues for further research.

LITERATURE REVIEW

Food supply chain versus urban food security

Research and business interest in the BoP have existed since Prahalad's (2005) book where he argued the BoP represents a significant business opportunity since half the global population currently lives on $5 or less a day (Zomorrodi *et al.* , 2019). The notion here was that firms would realise new opportunities to grow their businesses and provide multinational corporations within the global value chain, including GLRs, with lucrative new consumer markets of various demographics (Bendul *et al.* , 2017). As a result, the pursuit of less saturated markets has led to a wave of modernization of the retail food sector, generally led by GLRs.

However, this business-oriented focus ignores social sustainability and as a result GLR entry into such markets has not always been successful. One hindrance has been the mind-set adopted; some GLRs have not

adapted their strategy to the context, which can differ significantly from those they are accustomed to (Zomorrodi *et al.* , 2019).

SCM literature has widened its focus to include a more diverse range of stakeholders in sustainable decision-making (Touboulic and Walker, 2015) and embrace more of the social part of the triple bottom line or TBL (Elkington, 1994), even encouraging a form of 'social activism for SCM' (Touboulic and McCarthy, 2020). This wider focus has been discussed for BoP supply chains (see for example Khalid *et al.* , 2015; Yawar and Seuring, 2017 and Zomorrodi *et al.* , 2019) but empirical work is lacking to prove its efficacy.

Sustainability is usually studied and managed from a Global North perspective, which affects the issues it covers (Pagell and Shevchenko, 2009; Touboulic and Ejodame, 2016). Issues that are more relevant in an urban poor context, such as informal markets and neighbourhoods, have been outside the mainstream scope of sustainable SCM research and the tools to study them in more depth have been lacking.

Food supply chains have increasingly become centralised and global, and therefore more complex. Exacerbated retail power, especially by GLRs, influence urban food access and security of supply (Tuomala, 2020). Urban residents are net food buyers, regardless of their social and economic status, and this dependency on the market results in financial capacities limiting choices in terms of where and what to purchase. GLRs have been able to penetrate the emerging markets through foreign direct investment (FDI) and the liberalization of trade in these countries (Nguyen *et al.* , 2013).

Urban food security as a subject suffers from a lack of interdisciplinary research and data (Nguyen *et al.* , 2013). Previously, food security has largely been viewed as a rural issue with an emphasis on agricultural production and subsequent availability (Crush and Frayne, 2011). However, the Food and Agricultural Organization defines food security as all people having 'physical, social and economic access to sufficient, safe, and nutritious food to maintain a healthy and active life' (FAO,

2009). Availability is an important part of this, but access is equally if not more relevant, especially in an urban context. Urban residents thus generally suffer from individual or household food insecurity, the converse of security, stemming from financial or spatial constraints (Battersby and Crush, 2014).

Financial constraints derive from the inability to acquire food through the market due to a lack of entitlements. Sen (1981) argues that malnourishment is not usually caused by unavailability of food, but rather a lack of means to access existing foodstuffs, particularly for poor urbanites as net food buyers. Spatial constraints are linked to financial stability as having limited wealth can influence where one can afford to live. People in the lowest economic demographics are often forced to live in marginalised neighbourhoods characterized by e.g. precarious housing structures, inadequate access to basic services, and overcrowding (Fox, 2014).

Informal settlements thus become more widespread as city infrastructure development struggles to keep up with rapid urbanisation (Frayne and McCordic, 2015). The United Nations (2018) notes Thailand is already 50 percent urbanised, and that value is projected to keep growing in the next few decades as Bangkok achieves mega-city status. Globally, two thirds of the population are predicted to be living in cities by 2050.

Retail food distribution in Bangkok

Thailand's food retail scene has traditionally consisted of wet and night markets for fresh produce and meat, and local 'mom and pop' stores for dry goods and condiments (Banwell *et al.* , 2013). Thailand is among the many South-East Asian countries that has gone through a rapid retail food transformation over the past two decades (Kelly *et al.* , 2014). This transition towards 'modern' food retail began with local-foreign collaborations, but after the Asian crisis in 1997 foreign GLR chains took over control (Banwell *et al.* , 2013).

However, the Thai market still consists of a strong 'traditional' sector

alongside expanding modern retail outlets. This development is evident in many Asian contexts, where Reardon and Timmer (2014) suggested an interlinked set of transformations is taking place in the food economy. Urbanisation is a significant factor in this development, but often underestimated in terms of its importance, as has been established by e.g. Crush and Frayne (2011).

Urbanisation contributes through increased pressure on retail supply chains, as more people depend on the market for their nutrition. It is also an underlying factor in diet transformation, deriving from increased access to imported and processed foods as well as rising demand for animal products resulting from rising incomes. As a result of these developments, the food supply chain in Asia has modernised from a decentralised and largely traditional sector into a GLR or local supermarket-dominated industry (Reardon and Timmer, 2014; Kelly *et al.* , 2013).

However, the traditional sector remains a resilient and important part of urban food dynamics in Thailand and other parts of South East Asia. This sector is mostly informal and is a relevant part of grocery shopping in many poor urban neighbourhoods in emerging economies (Nandonde and Kuada, 2016). In Thailand the shift towards 'modern' retail coincided with urbanization and rising incomes, but in Bangkok and other Thai cities there are substantial urban poor communities that still rely on traditional retail, or do not see the value in changing their habits (Banwell *et al.* , 2013; Kelly *et al.* , 2014). GLR retailing has developed strongly in Thailand with international chains such as Tesco Lotus' large supermarkets and 7-Eleven's convenience stores ubiquitous in urban and suburban areas. GLRs are generally managed from Global North countries, and subtleties of cultural and social contexts in these new markets get lost in the transition (Maertens *et al.* , 2012).

Kelly *et al.* (2014) posit that there is both a positive and a negative impact from this transition on the diet and grocery habits of Thais. On the one hand GLRs expose consumers to a more diverse selection

of food, including healthy fresh produce. On the other 'modern' retail outlets tend to be heavy on unhealthy processed and calorie dense food that was previously not a part of a society's diet, but which are now much more accessible (Wertheim-Heck *et al.* , 2019). Furthermore, the supply chains of modern retail chains in Thailand have been found to lack in coordination and not comply with product standards (Ørtenblad *et al.* , 2020).

Along with retail modernization, food prices have been steadily rising in Thailand for the past 10 years, boosted by the increased availability of imported foreign groceries, which impacts the price of local produce as well (Trading Economics, 2021; Banwell *et al.* , 2013). This is a common pattern in Asia, for example in Vietnam traditional markets have significantly decreased in numbers making way for modern supermarkets (Wertheim-Heck *et al.* , 2019) while in Nepal and Cambodia rising food prices affect the urban poor as gentrification enroaches upon their livelihoods as food vendors (Boonyabancha *et al.* , 2019).

Street food is woven into the urban fabric of Bangkok as numerous international media have awarded honours such as 'street food capital of the world' which sees tourists flock to the most famous stalls, some of which even have Michelin-star ratings (Carrillo-Rodriguez and Reed, 2018). The Bangkok Metropolitan Authority (BMA) however has a different view on the matter. Since 1973 it has been trying to curb street vending by claiming it impedes traffic and is unfair competition to formal retailing (Nirathron and Yasmeen, 2019). The restrictions it has placed, such as completely banning street vending in certain public spaces, have caused significant outcry not just from tourists but from the Bangkokians it benefits (Carrillo-Rodriguez and Reed, 2018). Many ordinary citizens of Bangkok depend on street food for their daily meals, as well as the employment opportunities it offers otherwise marginalized people.

A reliable number of street vendors is difficult to obtain in any circumstance as the nature of the sector is diverse and vibrant (Roever

and Skinner, 2016). Between 2011 and 2013 the BMA relaxed its approach against the vendors and designated over 700 locations where vendors could operate, yet during this time there were over 20,000 registered vendors (Nirathron and Yasmeen, 2019). This is only an indication as to how many there may be city wide as it was thought a majority of vendors are unregistered.

Street vendors of food in Bangkok can represent anything from prepared food to ingredients for cooking, such as fresh vegetables and meat. Generally, the term street food refers to cooked dishes prepared either on the spot in a cart or mobile kitchen or brought to the location after having been prepared elsewhere (Steyn *et al.* , 2014). Accordingly, we use the term street vendors to refer to any kind of informal food vending activity as our study covers the sale of fresh ingredients and other groceries as well as prepared food.

There are two sources of supply for smaller retailers and street vendors in Bangkok. The former tends to go the wholesaler Makro for non-perishable foodstuff, who offers a credit card for small retail owners which helps them to have access to wider credit. For fresh foodstuffs, the latter will go to the wet market as they need fresh food daily. If the street vendor is more established (i.e. with a store) then delivery services can be offered by wet market sellers. Going daily means that the food vendor will only buy what is necessary for the day based on their available daily budget. For fruits and vegetables, the wholesale wet market in about 30 kilometres north of Bangkok while in Bangkok's central business districts, the largest wet market is in the Klong Toey neighbourhood.

Informal food retailing

Street vending is only one small part of an urban informal economy with street food being an umbrella under it. The informal food retailing economy needs to be understood at a general level to appreciate street food dynamics and its significance to the urban poor and awareness is growing about this role in the development of cities, particularly in the

Global South. Some view this economy as a hindrance to development through inefficient use of resources and technology as well as distorting official economic indicators (Elbahnasawy *et al.* , 2016), while others argue that sustainable development is not possible without acknowledging and embracing it (Brown and McGranahan, 2016). The informal economy is growing, especially in urban areas in the Global South, and some indicators suggest half of all non-agricultural employment is within it. Taking this into account, relationships between entities, such as the BMA and informal workers, need to be improved if an inclusive, socially sustainable agenda is to be achieved (Kawarazuka *et al.* , 2018).

Urban political ecology theory

The urban landscape is made up of countless social, environmental, and economic TBL flows that mediate the distribution and use of resources (Swyngedouw and Heynen, 2003). Examining these flows provides insight into any causality and underlying factors and enables a better understanding of phenomena such as urban food (in)security. Urban political ecology (UPE) is a useful tool for analysing these flows as it considers a city represents cumulative socio-ecological processes, or flows, within which people interact with each other and their environment (Page, 2003, Swyngedouw and Heynen, 2003).

UPE is an especially appropriate lens for food security research as it can examine hybrid relationships of social and ecological processes, balances, and contradictions that form the urban environment, which in a food security context are examples of power relations within neoliberal market forces. UPE places these flows into a physical location to consider contextual nuances, such as a city, individual neighbourhoods, or even households that represent core constructs within urban food security research (Agyeman and McEntee, 2014).
In early writings of UPE, water was used as an entry point to emphasize the juxtaposition of nature and society in urban environments which, in addition to its biological properties, has a myriad of symbolic, cultural, and socio-economic attributes (Swyngedouw, 1996). Food

has very similar connotations in society, sharing for example the power relations that control its distribution, which in turn affects who has access to adequate nutrition and why. In cities globally, food distribution infrastructure is largely controlled by large retail chains, such as supermarkets and GLRs, who control every part of the food supply chain without producing anything (Reardon *et al.* , 2007).

The centralisation of the food supply chain into the hands of a few GLRs has marginalised those who cannot financially or spatially access it. However, the dualist school of informality suggests that when formal channels are inadequate, an informal flow will cater to those left behind. Parallel flows of the same resource, such as food, are an indication of the reproduction of urban inequality (Castán Broto *et al.* , 2012). This strengthens the notion that food security is socially constructed through economic and political means, rather than a matter of fundamental availability of food (Heynen, 2006).

Retail food distribution and SCM theory

Retail modernisation has come about in waves, which have occurred at different times in the Global North and South, but have followed similar patterns (Lu and Reardon, 2018). Grocery retail was first organised around a decentralised collection of markets and individual shops located around settlements and was retail's first wave. The second wave occurred in the Global South in the 1980-90s, which consisted of the emergence of supermarkets and a supply chain driven by economies of scale bulk purchasing and cheaper prices. According to Lu and Reardon (2018), the third and fourth waves of food retail modernisation have occurred in the sphere of e-commerce, which is not within the scope of this paper.

Consumer accessibility of food in retail settings is measured by on-shelf availability and related profits (Trautrims *et al.* , 2009) and driving times to 'superstores' rather than short-trips between shops and supermarkets in urban high or main streets (Fernie and Grant, 2008). Store loyalty has become as important, if not more important,

than brand loyalty as evidenced by the largest grocers' ventures into non-grocery areas such as banking and other service-related sectors under their corporate brand umbrella. However, GLRs taking this business model of an everyday low price for products, high customer service levels, strong organizational culture, and efficient operations, into international markets has not proven as successful (Fernie, 2014).

GLR insistence on using this model in different cultural contexts has met resistance from local distributors, supplier and consumers and led to a disconnect in retail food distribution at the consumer level. Walmart entered and then left Germany during the 2000s (Fernie *et al.* , 2006) and despite owning the UK retailer ASDA for almost two decades, sold it in October 2020 to a UK consortium (Dummett and Nassauer, 2020). Before 2020, Tesco entered and left the USA, Korean and Japanese markets (Fernie *et al.* , 2006) and in March 2020 sold its Tesco Lotus operations in Thailand and Malaysia back to their original owners, the CP Group, who also own the 7-Eleven convenience store chain (Bangkok Post, 2020).

Furthermore, the consumer's role in the success or failure of international retailers has been limited in the literature. And yet, retail store patronage behaviour research suggests that organizations must either adhere to or influence different consumer cultures that find their expression in the importance attached to store attributes. Views rooted in traditional marketing and neo-classical theory assume such attributes are fixed and exogenous to the marketplace and thus not influenced by new entrants. As these are outside a retailer's sphere of influence new entrants can gain competitive advantage predominantly by meeting these preferences better than existing players. For GLRs this means following either an adaptation strategy or only entering those international markets where store choice attributes are the same or at least very similar as their home market (Fernie *et al.* , 2006).

Summary and research questions

The specific dynamics and needs of the urban poor need to be taken into

consideration to achieve urban food security. As the urban population, regardless of wealth status, is dependent on the market for their nourishment, the food supply chain plays a central role in attaining food security. In contexts like Bangkok, where inequality is high, parallel supply chains and flows form to serve different demographics. UPE is therefore a useful tool for examining these flows against extant retail food distribution and SCM theory by exploring underlying factors that contribute to urban inequalities and the formation of informal parallel supply chains.

Informality cannot be bypassed in urban research, especially in an emerging economy context. The significance of the informal sector in terms of employment, habitat and food is indisputable. In addition to the existing schools of thought behind the informal sector, which mostly view it as an opposite to the formal sector, and Brown and McGranahan (2016) propose an 'inclusionist' school which would include the informal sector in urban decision making and policy.
The informal food sector has always been major source of food for Bangkok's urban poor. However, the shift towards more formal and modern food retail in recent decades has affected the way this informal food sector functions. The GLRs that have orchestrated this change with their Global North mentality do not acknowledge the nuances of this context in Bangkok and as such do not really subscribe to total social sustainability for the BoP. Accordingly, to address our research objective outlined in the Introduction we developed the following research questions for study:

1. What currently comprises food retailing in Bangkok's urban poor neighbourhoods?

2. How is food retail modernisation affecting food security and access?

3. How do the different forms of the informal food sector (i.e. street food vendors, wet markets) impact urban poor residents' purchasing and food quality needs?

METHODOLOGY AND RESEARCH DESIGN

Due to a lack of integrative research on this phenomenon, an interpretivist exploratory and qualitative empirical study using semi-structured interviews was conducted in urban poor neighbourhoods of Bangkok, seeking the voice of the consumer (Darby *et al.* , 2019). Sampling was a combination of purposive, as residents were purposefully selected as core informed respondents, and convenience as due to practical concerns regarding which neighbourhoods and interviewees participated (Miles *et al.* , 2014).

Data collection and analysis

This study was conducted in three different neighbourhoods in Bangkok that are noted hereafter as N1, N2 and N3 for confidentiality and anonymity reasons. The neighbourhoods ranged in size from a small community to one of the largest slums in the city. In N1 it was also recommended to enlist the services of a guide who knew the area and the people in it for security reasons, which we did.
N3 is interesting as it is located between two upscale malls in Bangkok. The area is fenced off and difficult to wander into accidentally, but outside the makeshift walls is a bustling area for food vendors. Many of the people working in the many retail outlets in the two malls as well as nearby office workers buy their lunch from these vendors. There are similar areas located around the main N1 market and on the edges of the neighbourhood. Office workers queue at the most famous stalls around lunchtime for their favourite dishes. N2 is more residential and local, and not located near tourist attractions or commercial zones. There are several vendors in that neighbourhood who mostly serve neighbourhood residents. Interviewees for this study comprised residents of these three neighbourhoods – a demographic summary of them is presented in Table 1.

Table 1 Interviewee profiles

Neighbourhood	Self-employed	Employee	Unemployed	Elderly	Part-time/odd jobs
N1	8	4	1	1	3
N2	3	2	1	1	
N3	1	2		3	

A total of 30 interviews were conducted in these neighbourhoods. The purpose of the interviews was to generate insight into the food buying habits of the urban poor in Bangkok. While generalizability is limited in this type of exploratory and qualitative study, this approach allowed for a heterogenous group of respondents and deeper insight into the diverse habits of the urban poor.

Most of the interviews were conducted with consumers, but several of the self-employed interviewees were also asked about their business if they were food vendors. Two of the interviews in N1 were with vendors and they only discussed their business. Twelve of the respondents were self-employed to some degree, many with food related businesses such as selling food from their homes or a mobile kitchen. Other self-employed job titles included selling ice and shop owner. Three interviewees were sustaining themselves by doing odd jobs such as scavenging or babysitting. Elderly interviewees were categorized separately as it would be misleading to categorize them as unemployed. They generally received some form of assistance from family members or organizations.

Interview and analysis process

Interviews were conducted over a two-month period in 2019-2020 and the interview guide was drawn from extant literature. Basic interviewee

information was sought first including the interviewee's occupation, how many people were in their household, how much of their income was spent on food and more specific questions about groceries and eating habits. Next were questions about informal versus formal grocery outlets, food quality, and questions about cooking and buying prepared street food, as well as meat and vegetables, as fresh food, or lack thereof, is a good indicator of food security (Weatherspoon *et al.* , 2015).

All interviews were recorded in their entirety, transcribed, and translated, and were conducted with the assistance of a translator for the Thai language. The transcripts of the interviews were coded in NVivo12, using codes such as 'supermarket', 'prepared food', and 'community shops'. These types of codes are descriptive, which allow for an inventory of topics that can be categorized and fit well for data on social environments and formed the first coding cycle (Miles *et al.* , 2014).

In the second cycle these codes were further grouped into pattern codes to further explain emergent themes from the data (Miles *et al.* , 2014). This analysis led to three major themes: financial, nutritional and societal. For example, food prices and credit related primary codes were placed under the 'financial' theme, 'nutritional' encompassed codes such as rice, prepared food and cooking. Finally, 'societal' comprised of codes related to extrinsic factors such as the city of Bangkok's attitude towards street food vendors and traditional markets.

To ensure research rigor, guidelines from Halldórsson and Aastrup (2003) were followed to assess qualitative research quality through trustworthiness, which consists of credibility, transferability, dependability, and confirmability. As this research is inductive, qualitative and exploratory in nature, generalisability as such cannot be claimed as such. However, the intended practical and theoretical contributions can be asserted as transferable.

Findings

Food retail outlets

Thais are very proud of their food culture, and food is indeed everywhere in Bangkok. Outlets of various sizes and formats dominate the urban landscape and people are constantly eating. A Thai aphorism for this is that Thais are born to eat and do not just live to eat. In all three neighbourhoods an overwhelming majority of interviewees relied on all traditional forms of food retail: wet markets, street stalls and vendors, which corroborates the literature. The modern retail transformation was perceived e.g. in commercial areas and around public transport hubs, but residential areas were dominated by traditional vendors.

The general opinion is that supermarkets are more expensive, and the quality is not as good as wet markets. *"Mostly I will buy from the market. I know the vendors in the market and trust them... in the supermarket I don't know"* (N1-1). Having a more direct relationship with the seller of the food is an important aspect of purchasing decisions. Several interviewees mentioned that the food at the market is fresher and they trust the quality, whereas the supermarket was found somewhat questionable. *"Lotus is not as fresh as the market. They sell the old stuff very cheap"* (N1-2). Some interviewees would take advantage of the discounted produce at the supermarket but were dissatisfied with the quality. One interviewee bought chicken and pork at the supermarket, because she could get it at a discount, but shrimp she knew to be cheaper and better quality at the market. This was not an uncommon approach. While many respondents frequented both supermarkets and traditional outlets, the supermarket was mostly for goods such as soap, detergent, and school materials, not food. The market was commonly visited almost every day, interviewees would go to the supermarket once a month or even just a couple of times a year.

The market in N1 is famous in Bangkok and most of the people living in that neighbourhood use it for their groceries. People from N3 make the trip to the market for their groceries. However, the market can be

hard to reach for some of the residents, as distances can be quite long in the neighbourhood. There is a smaller market located centrally in the residential area of N1 where many people would buy ingredients and prepared food. The small market consists of 20-30 stalls and sells most items that people need daily. A common shopping pattern was to visit the N1 main market once a week and the local community market almost every day.

Local markets were deemed convenient because of its location but did not beat the main market in price. However, the cost of traveling to the main market would sometimes offset any price difference and would be worth it if buying in bulk, or for a specific need that was not available at the smaller market. In N2 a mobile vegetable vendor was utilized by several interviewees, as well as in N1, especially older people consumers. One elderly interviewee was unable to walk, so the mobile vendor knew to come to her and assist with food access.

Interviewees in smaller communities said there was no need to leave the neighbourhood for food, unless one wanted something special. Vendors in N3 for example mostly sold prepared food, so if one wanted particular fresh ingredients it was necessary to go elsewhere to shop. The community used to be much larger, but due to evictions brought on by the mall developers it has downsized considerably. The vendors now sell cooked food not only for the residents, but also the retail and office workers from the nearby areas. N2 is still very residential, with multiple grocer's shops, mobile vendors, and food stalls. Figure 1 illustrates a 'supply chain map' of Thai residents' purchasing frequency across different retail outlet types for comparison.

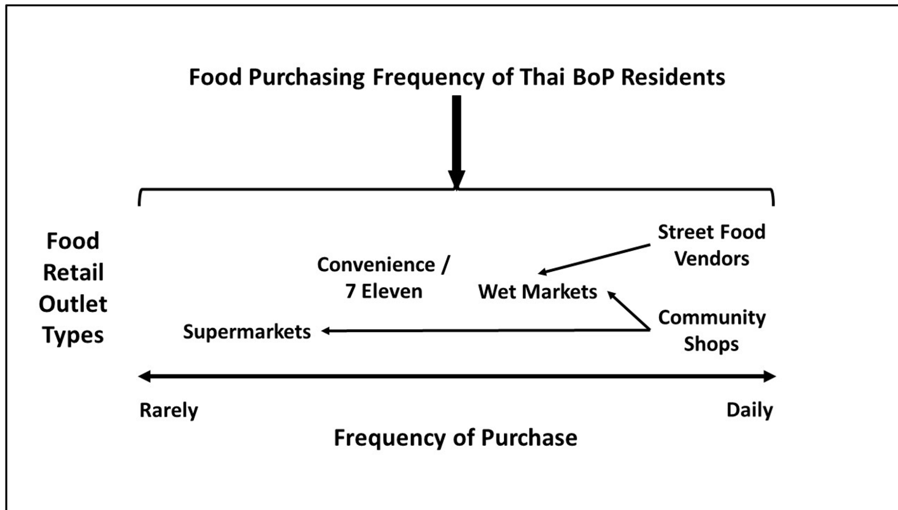


Figure 1 **Food purchasing frequency of Thai urban poor residents**

Many interviewees were recipients of a government welfare card, which allowed them 300 Thai baht (THB)[5] to spend on groceries at certain outlets. The card scheme was launched in 2017 to very mixed reviews on its efficiency in terms of poverty reduction (Durongkaveroj, 2020) and can be used in many formal retail outlets, such as supermarkets, but only for certain items. It cannot be carried forward, so one must use the specified amount every month or lose the remainder. Interviewees would mostly use it for non-perishable items such as sauces, dried goods and hygiene or cleaning products.

There was also a generational gap. Interviewees noted that while they themselves rarely went to supermarkets or 7-Eleven, their grandchildren would go there to buy sweets and drinks. The grandson of one elderly interviewee buys her groceries from the supermarket rather than a traditional market. A few interviewees even considered a trip to the supermarket a treat for them and their kids. They actually wouldn't buy anything, just window shop and play.

5

At 21 June 2021 from XE.com, 100.0 THB was equivalent to USD 3.16, GBP 2.29 and Euro 2.66.

These findings indicate that what are considered parallel metabolisms, i.e. the traditional outlets, are in fact the primary flow for the urban poor in Bangkok. This does not therefore fit the traditional definition of a parallel flow, which forms to serve those marginalised by the main metabolism (Castán Broto *et al.* , 2012). The dynamic in Bangkok is significantly different, as the traditional outlets are those that have always existed and are depended upon whereas the modern GLRs have come later to function parallel to those. The respondents did not feel comfortable shopping at the supermarkets and felt they lacked the social connections and feelings of trust, i.e. almost a feeling of being in a 'caste'.

Cooking and buying prepared food

Buying prepared food from vendors is standard practice in Thailand. Vendors are an integral part of the urban landscape, and a key factor in providing food security. While the primary focus of this paper is on consumers, the vendors interviewed brought some interesting insights and avenues for further study which are discussed later.

Most interviewees bought prepared food from vendors as part of their standard, everyday diet. The most distinctive pattern in cooking versus buying was family size. In general, if a household consisted of one or two people, it was considered more economical to buy prepared food rather than cook. However, if the household was large it was common to cook using fresh ingredients bought from the market. An interesting phenomenon was vendors selling cooked rice in individual portions. Many interviewees said they cooked a main dish that people would all share, but everyone had their own rice portions bought cooked and portioned. This way everyone could have the type of rice they preferred and there was no need to store rice in the house as space was limited in most dwellings. There was also concern about vermin and spoilage of products if stored, so people preferred to buy the prepared rice from vendors.

In the smaller neighbourhoods N2 and N3 it was common for

interviewees to have regular vendors they frequented for their daily meals. Regular vendors thus knew what their customers like in terms of e.g. spiciness or any restrictions they might have. One interviewee suffered from diabetes and high blood pressure; his regular vendors had been asked by his son to only sell him food within his restricted diet. However, since he worked as a motorcycle taxi driver, he often ate lunch outside of his own community and was able to cheat on his diet.

In all communities, interviewees chose the vendors mostly based on the quality and the delectability of the food. One lady said she spent too much money on food, simply because she loved to eat well and therefore did not always choose the most economic option, but the one she found the most enticing. If there were many family members eating together and where it would have made economic sense to cook a big batch to share, individual preferences dictated that it was easier to buy a prepared dish of one's choosing and then sit down together to eat. In this way interviewees' food preference counted more than economic savvy.

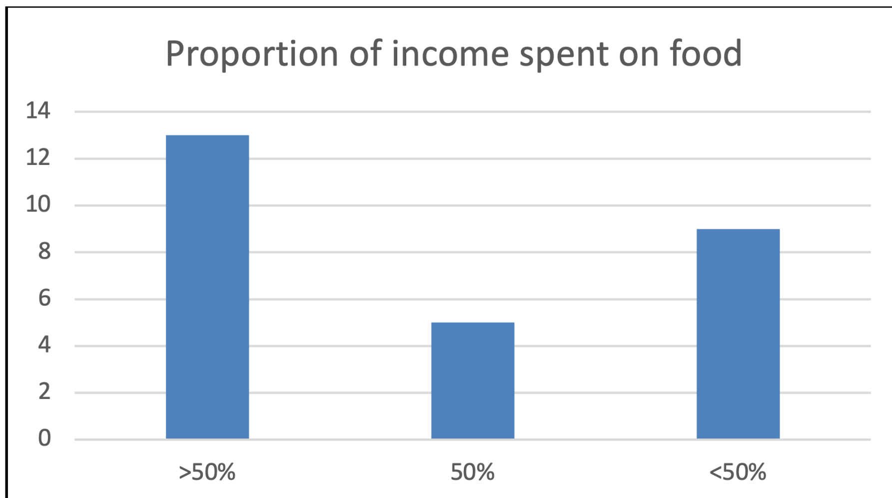
A notable exception to the pattern of buying prepared food for only one person were the interviewees who represented the poorest demographic. An elderly lady who was unable to walk long distances would normally hire someone to go to the market for her once a week to buy groceries that she would then cook at home and eat all week long. She has a fridge as well as a freezer, which was not a common appliance in Asian communities (Stephens *et al.* , 2016). Many people only had small refrigerators where they stored beverages. Others in the poorest demographic had similar patterns, the main staple of their diet being rice. *"I don't choose. I just get what I can get. I usually cook rice by myself. I cook once and can eat for 3 days."* (N1-4). A few interviewees also received donations from neighbours and family members as well as from Buddhist temples. It is normal practice if people do not have enough food to go to the temple and ask the monks for any leftover food that was given to them during their morning alms. Hence, temples can provide a safety net. Elderly interviewees also received aid from a foundation working in the neighbourhood, particularly assisting

elderly residents.

Food prices

Food is readily available all over Bangkok. In food security terms, this means that fundamental availability and physical access are not the deciding factors, but rather the underlying societal denominators that influence financial access in urban communities. About half of interviewees spent most of their income on groceries and food, as shown in Table 2. There was no clear pattern among the respondents in terms of whether self-employed people for example spent more on food than those with salaried jobs. Some pensioners were also doing remarkably well, as their children would provide for them. Others would need to spend almost all of their household income in order to feed their families. Even if the expenditure was less than half of their entire income, it was still a substantial amount of money and interviewees were generally very price conscious.

Table 2 Proportion of income spent on food



When asked whether food access has become easier or more difficult in the past few years, most interviewees concurred that outlets selling food were plentiful, but prices were increasing, occasionally at alarming rates. *"Before 100 [THB] can buy many things, but now we can buy only few things"* (N1-3). The price spike was evident both in fresh ingredients as well as prepared food. For the vendors and residents around N1, this makes sense as almost everyone purchases their ingredients at the main N1 market. The food price increases cause a chain of effects: food vendors must increase their prices to keep their profit margins at acceptable rates, but their customer base may not be able to afford their food any longer. This leaves both vendor and customer more vulnerable to food insecurity, among other issues food price spikes cause.

A notable price increase was observed by several interviewees in just the last year. The price per kilo of pork was said to have risen by 20 percent since the previous year and other goods have also become more expensive, perhaps a bit more gradually. *"For example, this morning I bought clams. It's 160* [THB] *I used to buy it for 35* [THB]. *How could that be."* (N1-1). Buying such expensive clams was justified with *"really wanting to eat them",* reaffirming the notion that in Bangkok occasionally preference trumps economics.

Some vendors selling prepared food in N1 were vending out of their own homes, or in conjunction with another business, such as a small grocery store. Thus, an underlying sense of community in the neighbourhood came to light when talking to the vendors. *"I know them. I know they can't afford it… so I get less profit."* (N1-9). This vendor refused to do what many of the consumers said vendors were doing: decreasing the portions but keeping the price the same. She knew her customers would not be able to get enough to eat if she increased her prices, so she chose to lower her profit margin instead.

Another vendor said she added more rice when she had to decrease other ingredients such as pork. While not as nutritionally sound, customers were able to fill their bellies without breaking the bank.

Another vendor said she did not keep her stall open every day, because she did not have enough customers, which directly impacted her and her household's food security. When business was slow, their own food mainly consisted of staple carbs such as rice. *"The priority is to be full"* (N1-2). She has also had to raise prices substantially due to the rising costs of ingredients and travel to the market, which is potentially also a factor in her loss of customers. Another indication of the importance of familiar vendors is the use of credit systems for regular customers. Several interviewees indicated that this system assisted them tremendously, if their income was irregular or their other expenses overwhelmed them.

A trade-off that many interviewees mentioned was between quality and price. Fresh ingredients were still available for a smaller price, but often this would result in quality concerns. *"If it's cheap it will not be very good. Like a fresh squid would be 200-250* [THB] *but if we want something cheap it could be 100-110* [THB] *it will not be very fresh."* (N1-4). In addition to culinary restrictions, bad produce could also have health implications.

DISCUSSION

According to the Thai National Statistics Office (NSO, 2018), the average Greater Bangkok household spent approximately 32 percent of its income on food, beverages and tobacco per month. The NSO survey covers 5670 households in the region with a diverse array of respondents. The data from their survey evidences that as income decreases a larger proportion of income is spent on food. Thus, looking only at aggregated averages of household expenditures does not provide a realistic perspective of what people spend money on due to these income disparities in Bangkok.

Even though formal retail and GLRs have been gaining ground in Thailand (Kelly *et al.* , 2014), our findings indicate that even in large cities where modern convenience stores and supermarkets are abundant, many people still rely on traditional formats of retail,

particularly residents who mostly frequent traditional food retail outlets. Low-income populations do not feel comfortable or welcome at modern supermarkets or are simply used to buying their groceries from markets and street vendors, supporting Wertheim-Heck *et al.* (2019) that in the wake of food retail sector modernisation urban poor groups or neighbourhoods are often disregarded in favour of benefitting wealthier demographics.

While these groups represent a large proportion of the population of cities in emerging countries but there is a lack of policies that would adequately address their specific needs (Wertheim-Heck *et al.* , 2019) and thus an opportunity for GLRs and other non-tradtional food retailers goes wanting due to such power balances (Hingley, 2005). Analyses of urbanisation as a factor in food system transformation, such as those brought forward by Reardon and Timmer (2014) consider urbanisation as an aggregate, rather than a sum of its parts. The substantial differences in the different demographics and spatial differences in urban areas need to be addressed more explicitly in the grocery retail modernisation discourse.

Considering Bangkok's urban poor to be a lucrative new market for GLRs to provide them with increased access to groceries, in accordance Prahalad's BoP theory, is not a sustainable approach. The system and product flows for the urban poor in Bangkok function according to their dynamics and serve their needs better. Interviewees in this study were wary of using supermarkets as they did not trust the quality and preferred to buy from micro retailers with whom they had a social relationship.

Using UPE in this study took both social and cultural aspects into consideration and enabled us to address our three research questions. We thus argue that researchers looking at BoP issues need to adopt a wider approach than simple consideration of market dynamics. Practically, supply chain and market penetration strategies used by GLRs have fallen short as well. There was little indication in any of the neighbourhoods that efforts had been made from the GLRs to cater to

the groups living in them. On the other hand, Bangkok vendors and markets were not provided with increased opportunities or support from food suppliers and distributors or local authorities to provide access, security and availability usually provided in a Global North context (Fernie and Grant, 2008).

A dichotomy between traditional and modern retail markets persists, with odds stacked in favour of the GLR controlled modern sector (Hingley, 2005) and discourse also perpetuates this dichotomy through pitting wealthy and low-income citizens into different groups. The different schools of thought on informality reflect this, the informal economy representing the urban poor. Using the 'inclusionist' approach (Brown and McGranahan, 2016) would equalize different demographics where the dynamics of groups such as the urban poor would receive comparable attention to their wealthier counterparts.

Some measures brought forward by the BMA indicate that other groups are being favoured over low-income groups, for example street vendors are being allowed in areas where they serve tourists rather than ordinary citizens. If the BMA reduces street food to a tourist attraction in Bangkok, blue- and white-collar workers may be forced to purchase their food from formal sources such as supermarkets, chain restaurants and convenience stores. According to Carrillo-Rodriguez and Reed (2018), this would on average raise monthly food expenditure by almost 360 THB, which is not insignificant when contrasted with income and food expenditure. People in the Greater Bangkok area spend anywhere between 3000-8000 THB per month on prepared food, constituting up to 60 percent of their entire food spending (NSO, 2018).

Several interviewees in this study completely depend on street vendors for their food, and for them having to spend 10 percent extra per month would be financially unsustainable. There are however other factors to consider beyond price. The food vendors are an integral part of the community in neighbourhoods like those examined in this study. They often know their customers in ways a 7-Eleven never could; a prime example is the motorcycle taxi driver whose regular vendors know his

dietary restrictions and do not sell him food he should not have.

Spatial access is another factor, the street vendors are located all over the neighbourhoods, at convenient spots for residents to frequent. We did however observe in many places several street vendors outside 7-Eleven stores, i.e. residents buy food from the vendors and top up with snacks or drinks from 7-Eleven. This suggest there may be a symbiotic relationship between street vendors and 7-Eleven that enhances food access and security, however we did not pursue this aspect in this study.

In the main, we believe that having just one or two convenience stores per neighbourhood without any informal vendors would decrease the range of food available to residents and cause spatial constraints for people who cannot move with ease. From vendors that residents are familiar with, it is also possible to buy with credit if one is financially struggling, which would not be possible at formal retailers.

Even though many interviewees were struggling to make ends meet on a financial level, food insecurity was relatively absent from these neighbourhoods. While there is a clear neoliberal agenda being perpetuated by the GLRs and the BMA, the traditional food retailers are still able to maintain their parallel flows of goods, serving residents who are being marginalized by the mainstream agenda. In Thailand, cultural attributes are prevalent in food and eating are key factors in food security discourse. While grocery chains in Thailand are predominately under local ownership, the cultural aspects of retail are not well represented in their strategies.

Bangkok cuisine is also a melting pot of regional culinary cultures as people have emigrated from across Thailand (Banwell *et al.* , 2013). Keeping these cultures alive requires access to fresh produce from all over the country, and if the GLRs attempting to take over the grocery market do not provide necessary ingredients, it is up to the parallel, traditional flows to do so. These factors again emphasise UPE's usefulness as a theoretical lens for urban food security research as relevant, underlying food flows factors are not just physical and

financial, but also cultural and socioecological.

Introducing a UPE based perspective to retail food distribution and SCM would enhance the pursuit of food security and access for the urban poor through inclusivity and diversity. For example, the supply chains of traditional and informal grocery outlets are a fertile area of research. Micro-retailers have not only been commended as a key to operating a grocery retail business in the Global South (Nandonde and Kuada, 2016) but as this study indicates are an essential part of promoting urban food security. Expanding the concept of food supply chains beyond Global North, GLR-led notions to include more traditional and decentralised perspectives, including a hybrid collaborative food model of distribution (Hingley, 2005; Hingley *et al.* , 2015), would have two overarching benefits.

First, this would organically extend the scope of sustainable SCM to marginalised demographics and the Global South, rather than stagnating in the Global North. Places where modernisation of the food retail sector is still underway, like Thailand, could place more emphasis on developing the traditional sector for the people who actually use it through collaborative integration with Global North food retail supply chains.

Aspects such as the proximity of the outlets to people's homes and places of work as well as the products they offer are details relevant to both sustainable SCM as well as food security. UPE also draws attention to some of the detrimental effects of modernisation, where traditional is considered backwards and modernising is done at the expense of those who are most vulnerable. Pushing out traditional modes of retail has had an alienating effect on the urban poor in Thailand and is costing many traditional retailers their livelihoods.

Second, the comprehensive viewpoint advocated by UPE fosters the inclusion of social aspects in sustainable SCM. Factors such as urban inequality, poverty and marginalization all have an impact on sustainable SCM but have not been featured in research as prominently

as economic and environmental elements (Yawar and Seuring, 2017). Sustainable SCM can also be useful for UPE based research to address financial and material flows in a concrete and practical way. Properly identifying supply chains, their origins, and their final consumers could determine inequalities in access to food, as well as differences in habits across demographics.

CONCLUSIONS

It is not an exaggeration to conclude that traditional food retail is the backbone of Bangkok's urban food security. Based on this study's findings, this sector is the main source of food for the urban poor, while formal retail is used only for specific items a few times a month. Thus, current changes in Bangkok's food retail scene are geared toward a different demographic, while the urban poor remain marginalised. For example, there have been city-wide efforts by the BMA to restrict street vending and the number of wet markets has reduced drastically in the past decade.

Further, vendors and markets are not only a source of food but are also a significant employer among low-income demographics. Many interviewees had their own micro businesses or worked at one. Some were food related, selling prepared food or ingredients for example, or services such as looking after children or driving a motorcycle taxi. Micro-retailers and the informal economy in general are thus an integral part of the economic, social, and environmental fabric in cities such as Bangkok, and cannot be ignored in any sustainable food retail and supply chain efforts.

This paper contributes theoretically firstly by adapting and combining development studies theory, particularly UPE, and retail food distribution and SCM theory to demonstrate that in a urban poor context the primary issue is more about ensuring that existing retail distribution networks and local supply chains operate efficiently, effectively and collaboratively to adequately provide nutritious food to the urban poor as opposed to simple BoP market segmentation. The

findings thereby contribute to both theories and domains and provide an informed critique about current interpretation and use of BoP.

Sustainable SCM can be a very useful tool for food security research as it can contextualise material and financial flows and pinpoint areas or specific flows that are factors in inequality and marginalisation. While UPE can identify deeper societal structures and underlying factors, sustainable SCM has a concrete perspective to focus on the practicalities of the flows. Investigating traditional versus formal food retail supply chains could lead to interesting notions about why certain demographics favour one or the other and assist various types of retailers, such as micro-retailers or GLRs, to better meet customer needs through appropriate distribution. Further examination of the traditional sector could also help make it more efficient and better serve those who it benefits, i.e. urban residents. The informal sector also presents a fertile area to enhance sustainable SCM research to pursue a more diverse approach to sustainability.

Secondly, the empirical study took place with urban poor residents as consumers to generate insights into their food purchasing habits and behaviour, and to what extent the existing food retail supply chain met their needs and where there were shortcomings. This is an under-developed area of research in SCM literature where ‘point-of-origin to point-of-consumption’ often means ‘to point-of-sale’.

From a practical perspective, the traditional food retail found in Bangkok’s urban poor environments are more efficient and effective compared to GLR chains concerned about throughput at low cost. Hence, food retail supply chains at this grassroots level, comprising micro-retailers and informal networks, respond better than formal networks and GLRs to the dynamics of urban poor neighbourhoods in different geographical contexts and generate opportunities for small traders to develop and flourish. This suggests hybrid, collaborative models of food retail distribution are required to properly access and service urban poor neighbourhoods. Such collaboration between GLRs and local micro food retailers can provide better security and access

to food for these neighbourhoods and much better market access for GLRs than current strategies.

Socially, the study and discussion provided in this paper also contribute towards meeting two UN Sustainable Development Goals: Zero Hunger and Liveable Cities. And finally, the interdisciplinary nature of this study enhances the discourse in socially sustainable retail supply chain management and food policy and planning from governmental stakeholders and demonstrates the value of such research investigating food issues in urban poor contexts.

This study is not without limitations. The study was conducted in late 2019 and early 2020 before the effects of restrictions stemming from the coronavirus (Covid-19) pandemic. The situation has undoubtedly changed significantly since then but is beyond the scope of this paper. Generalizability is limited in this type of exploratory study however the rigorous approach followed allowed for a heterogenous group of respondents who provided deeper insights into the phenomenon. Further research should test these insights and the findings on a wider scale to provide additional validity and veracity we provide the following suggestions to expand this research accordingly.

1. Food security in terms of access and availability is not a major issue in Bangkok. However, there are numerous 'gentrification' plans for entire neighbourhoods as well as efforts to banish street vendors from public places. The traditional sector of markets and vendors represent a backbone of food security for urban poor residents and Bangkok and should be approached from that angle rather than a tourist attraction. This would include looking at symbiotic relationships between traditional and other retailers, e.g. street vendors and 7-Eleven.

2. The ubiquitous nature of the traditional sector should be emphasized and contrasted with other cities, where food security is more of an issue. UPE based analyses where factors such as food culture and other societal factors are taken into considerations

are useful in this type of analysis.

3. Interdisciplinary studies on urban food security form a diverse range of contexts are needed. Sustainable SCM is an example of a field of research where these types of studies would be mutually beneficial to both urban food security as well as the reference discipline.

4. Effects from the coronavirus (Covid-19) pandemic should be investigated to determine the depth and longevity of such effects and the traditional sector's resilience to them.

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Virva Tuomala

Urban food security at the intersection of retail supply chain management and development studies

This thesis examines urban food security at the intersection of retail supply chain management and development studies. Food security in a multifaceted issue and has previously been framed through agricultural production and the fundamental availability of food. As more than half of the global population currently resides in cities and other urban areas, urban issues are becoming more pressing in the field of development, as well as supply chain management. Urban food security pertains to the availability and accessibility of food, making the food supply chain and grocery retail a central factor in potential solutions.

Urban dwellers are almost exclusively reliant on the market for their nourishment. Particularly in a Global South context, economic and spatial constraints play a large role in food security. This thesis focuses on poor urban neighbourhoods and the underlying societal structures that lead to these constraints. Special attention is paid to the multidimensionality of poverty, which goes beyond the economic framing to include aspects such as living standards and health.

Empirical work for this thesis was completed in South Africa, (essay 2) and Bangkok, Thailand (essay 3). The data consists of interviews with consumers, representatives of grocery retail, and social workers. The consumers are residents of poor urban neighbourhoods, whose specific needs and grocery dynamics are often marginalised in favour of private sector agendas. The importance of the informal food sector is highlighted in the study, emphasizing the multidimensionality of the urban context. While there is a wave of grocery retail modernisation in the Global South, it is imperative to also consider the more traditional outlets, such as markets and micro retailers, in the solutions for urban food security.

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